

Rocky Flats Environmental Technology Site

ENVIRONMENTAL RESTORATION PROGRAM OPERATIONS PLAN

Revision 1

Responsible Organization: Environmental Restoration Program

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ACRONYMS AND ABBREVIATIONS

AB	authorization basis
ACM	asbestos containing material
AL	action level
ALARA	As Low as Reasonably Achievable
Am	Americium
AR	Administrative Record
As	arsenic
ASA	Auditable Safety Analysis
ASD	Analytical Services Division
AST	aboveground storage tank
BMP	best management practice
BZ	Buffer Zone
BZSAP	Buffer Zone Sampling and Analysis Plan
CA	Contamination Area
CAD/ROD	Corrective Action Decision/Record of Decision
CAM	Continuous Air Monitor
CBD	Commerce Business Daily
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CHWA	Colorado Hazardous Waste Act
COC	contaminant of concern
COOP	Conduct of Operations
CPB	Closure Project Baseline
CRA	Comprehensive Risk Assessment
CRZ	Contamination Reduction Zone
CSO	Criticality Safety Officer
CSOL	Criticality Safety Operating Limit
CTR	Contract Technical Representative
D&D	deactivation and decommissioning
DOE	U.S. Department of Energy
DOP	Decommissioning Operations Plan
DOT	U.S. Department of Transportation
EDD	electronic data deliverable
EPA	U.S. Environmental Protection Agency
ER	environmental restoration

EROP	Environmental Restoration Operations Plan
ESS	Environmental Systems and Stewardship
EZ	exclusion zone
FDCM	Field Data Collection Module
FIDLER	Field Instrument for the Detection of Low-Energy Radiation
FIP	Field Implementation Plan
FM	Facility Manager
FY	fiscal year
GIS	geographic information system
GPS	global positioning system
H&S	health and safety
HASP	Health and Safety Plan
HCA	High Contamination Area
HRA	High Radiation Area
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IDC	Item Description Code
IDM	investigative derived material
IHSS	Individual Hazardous Substance Site
IM/IRA	Interim Measure/Interim Remedial Action
IMP	Integrated Monitoring Plan
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IWCP	Integrated Work Control Program
JET	Joint Evaluation Team
JHA	Job Hazard Analysis
JTB	Job Task Briefing
K-H	Kaiser-Hill Company, L.L.C.
kg	kilogram
LEL	lower explosive limit
LO/TO	lockout/tagout
LOQI	List of Qualified Individuals
LRA	Lead Regulatory Agency
MAR	Management Assessment of Readiness
MAR	Material at Risk
mg	milligram
MSD	matrix-spike duplicate
NEPA	National Environmental Policy Act

NFA	No Further Action
NIOSH	National Institute of Occupational Safety and Health
NMSL	Nuclear Material Safety Limit
NPWL	new process waste line
OIS	Oil Inspection Section
OPWL	original process waste line
OSHA	Occupational Safety and Health Administration
OS&IH	Occupational Safety & Industrial Hygiene
OU	Operable Unit
PA	Protected Area
PAC	Potential Area of Concern
PAM	Proposed Action Memorandum
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PCOC	potential contaminant of concern
PEB	pre-evolution briefing
PIT	powered industrial truck
POD	plan of the day
PPE	personal protective equipment
PSP	Project Sampling Plan
ppm	parts per million
Pu	plutonium
WRE	Property Waste Release Evaluation
QA	quality assurance
RA	Radiation Area
RADMS	Remedial Action Decision Management System
RADP	Remedial Action Decontamination Pad
RBA	Radiological Buffer Area
RCRA	Resource Conservation and Recovery Act
RCT	Radiological Control Technician
RDM	Readiness Determination Manual
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RIN	report identification number
RISS	Remediation, Industrial D&D, and Site Services Project
RSOP	RFCA Standard Operating Protocol
RWP	Radiological Work Permit

SAAM	Selective Alpha Air Monitor
SAP	Sampling and Analysis Plan
SAR	Safety Analysis Report
SME	subject matter expert
SOP	standard operating procedure
SOW	statement of work
SWD	Soil Water Database
SZ	Support Zone
TO	task order
U	uranium
UBC	Under Building Contamination
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
UST	underground storage tank
V&V	verification and validation
VHRA	Very High Radiation Area
VOC	volatile organic compound
WCD	work control document
WGI	Waste Generating Instruction
WEMS	Waste and Environmental Management System
WPF	Work Process Form
WRR	Waste Requirements Representative
WSRIC	Waste Stream and Residue Identification and Characterization

1.0 INTRODUCTION

The mission of the Environmental Restoration (ER) Program is to implement a streamlined characterization and remediation program to meet the physical completion criteria of the contract between the U.S. Department of Energy, Rocky Flats Field Office (DOE) and the Kaiser-Hill Company, L.L.C. (K-H), consistent with the Rocky Flats Cleanup Agreement (RFCA) (DOE 1996). Site closure is currently scheduled for 2006. Closure activities must be performed in a manner that is safe to workers and the public, and protective of the environment.

1.1 Purpose and Scope

This ER Operations Plan (EROP) establishes requirements for planning and executing a dynamic environmental characterization and remediation process to facilitate accelerated closure of the Rocky Flats Environmental Technology Site (RFETS or Site).

The EROP is based on regulatory and Site requirements, and will be used to perform all aspects of ER projects in accordance with RFCA, approved RFCA decision documents, and the RFETS Integrated Safety Management System (ISMS), as implemented through the Site Integrated Work Control Program (IWCP) (K-H 2000a).

The EROP also provides guidance to ER Field Project Managers and Subcontractors to implement work scope, and it provides implementation tools (e.g., templates, tables, process flow charts, procedures) to aid the field project teams in performing their duties.

1.2 Regulatory Framework

In 1996, DOE, the Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE) executed RFCA. RFCA is the Federal Facility Compliance Agreement and Consent Order negotiated pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and Colorado Hazardous Waste Act (CHWA).

RFCA provides the regulatory framework for achieving accelerated cleanup and Site closure in a manner that is safe to workers and the public, and protective of the environment. As discussed in the Rocky Flats Closure Project Management Plan (K-H 2001a), DOE intends to disposition all special nuclear material and regulated wastes, demolish facilities, and remediate contaminated areas to the extent that future land uses are enabled and downstream water supplies are protected.

Cleanup is proceeding in the following phases: deactivation and decommissioning (collectively referred to as D&D), and ER. During deactivation, radioactive and hazardous materials are removed from facilities, non-essential systems are drained and/or de-energized, and facilities are placed in a safe and stable configuration pending the beginning of facility decommissioning. Deactivation activities are performed in accordance with existing facility operating procedures.

Decommissioning includes all component removal, size reduction, decontamination, and demolition activities associated with the removal of buildings from service with adequate regard for the health and safety of workers and the public, and protection of the environment. Decommissioning activities are currently being performed by the Site's D&D organizations in accordance with facility Decommissioning Operations Plans (DOPs) for the plutonium processing buildings and RFCA Standard Operating Protocols (RSOPs) for less contaminated facilities.

The ER Program includes all the activities necessary to characterize and remediate soils and groundwater to meet RFCA action levels (ALs). The soil ALs have two trigger points: Tier I and Tier II (DOE 1996). Soils with contaminant concentrations exceeding the Tier I ALs require remedial action. If the concentrations are between the Tier I and Tier II ALs, further evaluation and/or management action is required. If concentrations are less than the Tier II ALs, no remedial action (or further remedial action) is required. The majority of ER activities will be conducted in accordance with the Industrial Area (IA) Sampling and Analysis Plan (SAP) (IASAP) (DOE 2001a), the Buffer Zone (BZ) SAP (BZSAP) (DOE 2002a), and the RSOP for Routine Soil Remediation (ER RSOP) (DOE 2002b).

CDPHE is the Lead Regulatory Agency (LRA) for ER projects conducted in the IA, and EPA is the LRA for the ER projects conducted in the BZ. For all field projects, DOE, CDPHE, and EPA representatives may observe field activities where it is possible to do so without creating health and safety problems or disrupting ongoing work activities. The DOE, CDPHE, and EPA representatives will be informed of project status, and will be invited to routine project meetings and informal discussions of ER project documents.

Due to the Site's aggressive closure schedule, D&D and ER activities are being conducted concurrently across the Site. As D&D and ER activities are concluded, a draft RCRA Facility Investigation/Remedial Investigation (RFI/RI) will be developed to document the accelerated actions, and a Comprehensive Risk Assessment (CRA) will be prepared to verify that potential contamination remaining at the Site is within acceptable risk levels as defined by CERCLA and implemented through RFCA. The Final Corrective Action Decision/Record of Decision (CAD/ROD) for the Site will include, as necessary, post-closure monitoring and operation requirements, including 5-year requirements for Site reviews to evaluate the effectiveness of specific remedies.

1.3 ER Program Functional Areas

The ER Program is divided into several functional areas, as shown on Figure 1 and described in the following paragraphs.

1.3.1 Integration and Engineering

Integration and Engineering includes the preparation and maintenance of ER Program planning documents, RFCA decision documents, and engineering designs in accordance with applicable regulatory and Site requirements. Also included are tasks associated with document preparation and maintenance, such as obtaining document approvals, providing implementation guidance, and performing peer reviews of documents prepared by Subcontractors and other Site organizations.

ER Program planning documents include this EROP, the ER Quality Assurance Program Plan (K-H 2001b), ER Health & Safety Plan (K-H 2001c), and the ER Management Assessment of Readiness (K-H 2001d). These documents have been reviewed and approved by ER Program managers and peer reviewers.

RFCA decision documents include the IASAP, BZSAP, and associated SAP Addenda; the ER RSOP, the RSOP for Asphalt and Soil Management (DOE 2001b), and associated RSOP Notifications; as well as ER project Closeout Reports. These documents are approved by the regulators.

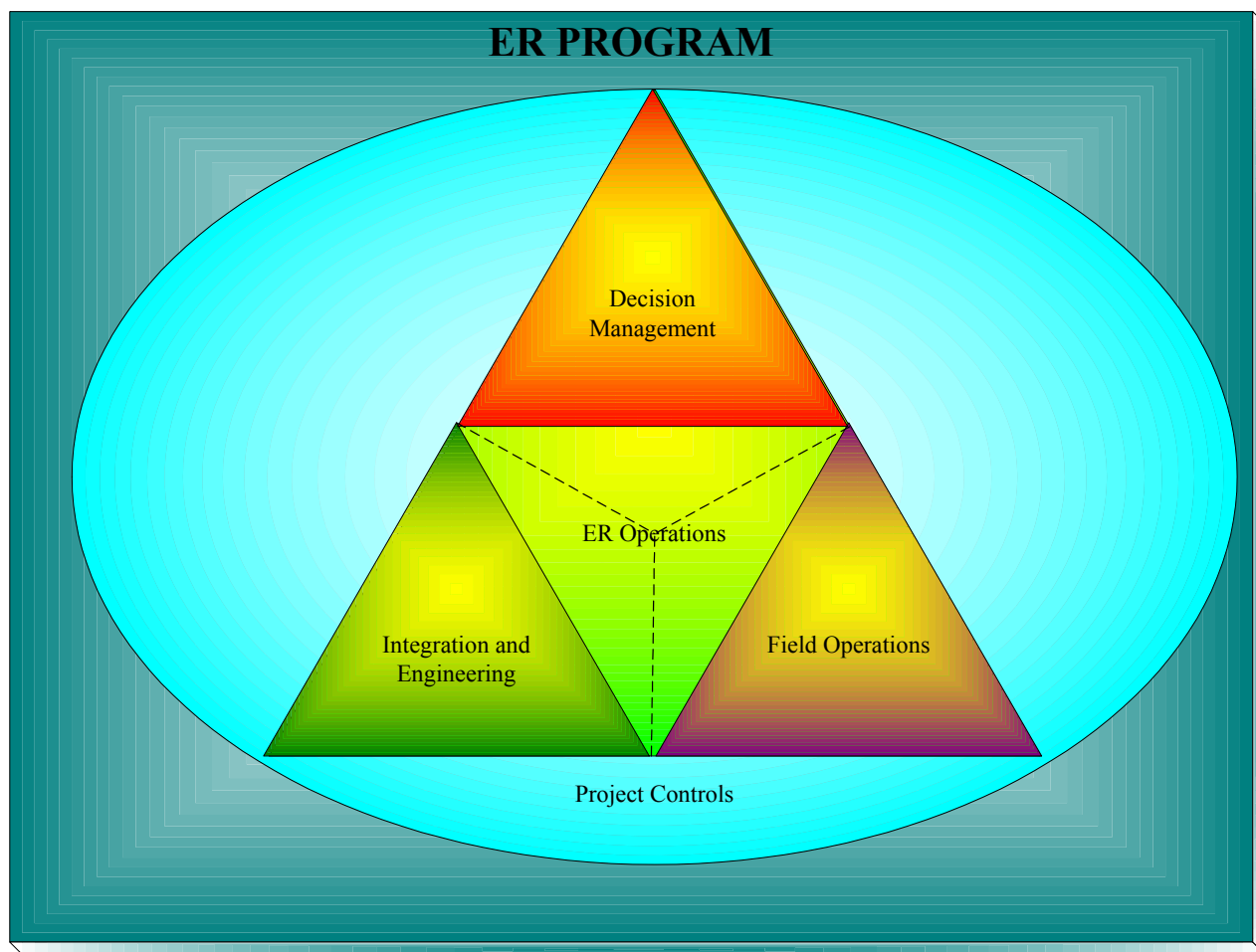


Figure 1. ER Program Functional Interfaces

Additional tasks performed within this functional area include:

- ER evaluation of areas for the Soil Disturbance Permit process;
- Preparation of Environmental Checklists and associated Addenda in support of ER activities;
- Preparation of updates to the Historical Release Report (HRR), including negotiation and documentation No Further Action (NFA) determinations;
- ER interface with the Site's CERCLA Administrative Record (AR);
- Performance of special studies;
- Preparation of engineering designs; and
- Performance of Contract Technical Representative (CTR) duties for the Characterization Subcontract.

1.3.2 Field Operations

The Field Operations functional area includes the planning and performance of field work in a safe, compliant, and consistent manner. Tasks performed within this functional area include the development of project-specific work control documents (WCDs), such as Field Implementation Plans (FIPs) and associated FIP Addenda, Health and Safety Plans (HASPs) and associated HASP Addenda, and IWCP work packages. These documents require Site approval. Additional tasks performed within this functional area include:

- Preparation of Soil Disturbance Permits in support of ER activities;
- Readiness assessments for field projects, including responsibility for acquiring necessary permits, documentation, and training;
- Characterization of Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs) and Under Building Contamination (UBC) Sites, either during remediation or as stand-alone projects in support of NFA determinations;
- Remediation of IHSSs, PACs and UBC Sites;
- Restoration activities including temporary re-grading and re-seeding, removal of clean concrete and asphalt, and final Site grading;
- Waste management activities including construction, maintenance, and inspection activities associated with remediation waste staging areas;
- Mobilization, maintenance, and demobilization of temporary facilities, including laboratories, office facilities, and shower facilities;
- Performance of CTR duties for the Remediation Subcontract; and
- Planning and tracking the use of Steelworkers and Radiological Control Technicians (RCTs) for ER projects.

1.3.3 Decision Management

The Decision Management functional area provides the tools necessary to ensure that appropriate data are collected and reported in a timely and consistent manner. This function is fulfilled through the use of the Remedial Action Decision Management System (RADMS). RADMS is a computer-based system that employs geostatistical, database, geographic information system, and risk management tools to:

- Provide real-time remedial action decisionmaking;
- Facilitate the decisionmaking interface between K-H, DOE, EPA, and CDPHE;
- Provide a technically defensible data record that will support the final CAD/ROD at Site closure; and
- Enable K-H to demonstrate to DOE that it has met its contractual commitments.

Additional tasks performed within this functional area include performance of CTR duties for the Data Management subcontract.

1.3.4 Project Controls

The Project Controls function is comprised of five sub-functions:

- Cost, Schedule and Scope Oversight and Tracking - Assist in developing corrective actions and controls.
- Procurement – Assist in obtaining subcontract services. This function includes subcontract administration.
- Quality Assurance – Provide quality assurance oversight to the ER Program.
- Subcontract Administration – Perform CTR duties for ER Staff Augmentation subcontracts.
- Records and Data Management – Ensure the appropriate collection and storage of quality records generated by the ER Program. This function includes the management of the ER Document Control Program and maintenance of the ER Library and Records Center.

2.0 ER PROGRAM ORGANIZATION

The ER Program involves an aggressive approach of characterizing and simultaneously remediating contamination release sites. Accordingly, the Program is organized to ensure characterization activities are coordinated closely with remediation activities and performed in accordance with applicable regulatory requirements and Site policies and procedures. Both the ER Program organization and interfaces with the Site support organizations are discussed in this section.

2.1 ER Program Organization Structure

The ER Program has a modified matrix structure where individuals may be supporting multiple functions and/or projects. This organizational structure is flexible and quickly adjusts to changing conditions. Communication is key to the success of this type of organization, including the clear communication of programmatic and project-specific priorities and requirements.

The K-H team consists of K-H employees and subcontracted staff. Sitewide characterization and remediation services are being provided by Subcontractors. The Characterization Subcontractor is responsible for implementing the IASAP and BZSAP, and the requirements outlined in this EROP, SAP Addenda, and project-specific HASPs and HASP Addenda.

The Remediation Subcontractor performs remediation activities on a project-specific basis, in accordance with this EROP, the ER RSOP or other applicable RFCA decision document, and project-specific task orders (TOs), FIPs, and HASPs. The overall organizational structure is depicted in Figure 2.

2.1.1 ER Program Manager

The ER Program Manager is responsible for the overall direction of the ER Program and has ultimate responsibility, accountability, and authority in any matter involving ER project execution. The ER Program Manager:

- Assigns sufficient personnel to staff projects and provides technical direction, as appropriate;
- Assures that projects are managed within authorized scope, schedule, and budget constraints;
- Assures that ER projects are performed in accordance with applicable Site safety and operational requirements;
- Assures that ER project reports are current and project milestones are met;
- Provides guidance and assists in project planning;
- Directs testing and research that will contribute to project objectives (if applicable); and
- Conducts management walkdowns and performs management assessments of ER projects to ensure compliance to external and internal regulations and requirements, including quality assurance, health and safety, and Site procedures. This responsibility may be delegated.

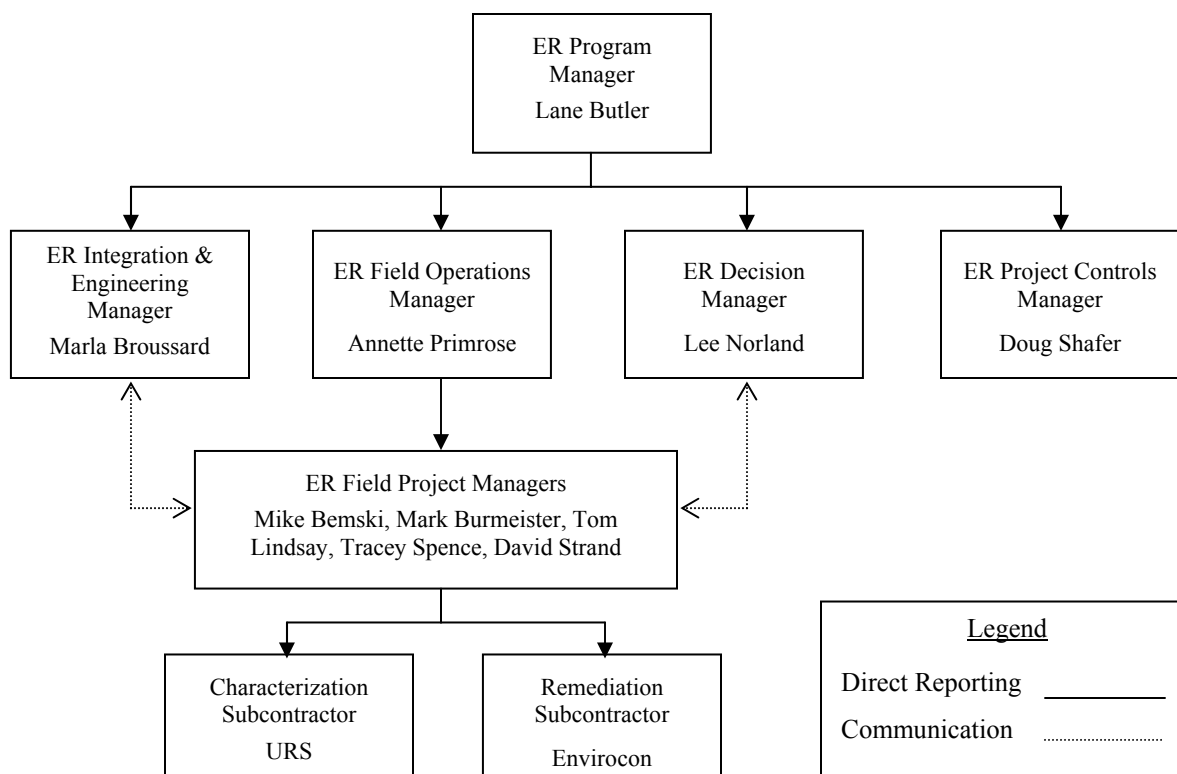


Figure 2. ER Field Project Organizational Structure

2.1.2 ER Field Operations Manager

The ER Field Operations Manager is responsible for oversight of all field operations to ensure they are planned and scheduled appropriately, adequately staffed, and compliantly managed. The ER Field Operations Manager assigns field project responsibilities, monitors on-going work, prioritizes resources between projects, and maintains up-to-date status of the ongoing field activities. In addition, the ER Field Operations Manager takes the lead in resolving programmatic issues.

The ER Field Operations Manager provides guidance and assists in planning and implementing field projects. During project implementation, the ER Field Operations Manager ensures that the field projects are conducted in accordance with the approved schedule and within the safety and operational requirements of RFETS, and assures that project reports are current and project milestones are met.

2.1.3 ER Field Project Managers

ER Field Project Managers are assigned projects by the ER Field Operations Manager and have ultimate responsibility, accountability, and authority in any matter involving their assigned projects. The ER Field Project Managers are responsible for managing their assigned projects within the authorized funding and approved work scope and schedule.

As part of their assigned job duties, the ER Field Project Managers work with the Integration and Engineering group, at the minimum, to review and concur with the major planning documents (e.g., RFCA decision documents, SAPs and associated SAP Addenda) associated with their projects.

The ER Field Project Managers implement the planning documents with support and services provided by the Characterization Subcontractor and Remediation Subcontractor. The ER Field Project Managers have oversight responsibility during field implementation and ensure that the projects are implemented in compliance with applicable regulatory and Site requirements. As required, the ER Field Project Managers request assistance from facility and Site safety management programs to oversee certain aspects of the work.

The specific duties of the ER Field Project Managers include the following:

- Develop the project-specific HASP and Job Hazard Analysis (JHA) in conjunction with the Subcontractors.
 - Develop the task or project-specific HASP Addenda and JHA in conjunction with the Characterization and Remediation Subcontractors.
- Develop the project FIP (as required) in conjunction with the Remediation Subcontractor.
 - Develop task- or project-specific FIP Addenda in cooperation with the Remediation Subcontractor.
- Complete a Management Assessment of Readiness (MAR) prior to project startup.
- Initiate an ER RSOP Implementation Checklist prior to project startup.
- Coordinate characterization and remediation activities for the project.
- Identify required resources in advance of need and communicate these requirements to the K-H CTRs or support organizations.
- Maintain up-to-date schedules and develop work-arounds with the Characterization and Remediation Subcontractors to resolve schedule issues.
- Assist the CTRs in tracking project costs, developing revised budgets, and preparing subcontract modifications.
- Ensure the Characterization and Remediation Subcontractors execute the work within the assigned work scope, on time, and within budget.
- Provide daily technical direction and field oversight of Subcontractor work.
- Coordinate closely with the Decision Management group to determine the extent of the remedial action.
 - Transmit information to Subcontractors and CTRs in a timely fashion.
 - Evaluate impacts of field information on the project cost and schedule, communicate with impacted ER groups and mitigate, as possible.
- Obtain Site permits, interface with Site organizations, and coordinate Site resources.
 - Elevate issues to the ER Field Operations Manager and assist with resolution.

- Perform incident notification and reporting in accordance with Site requirements.
- Provide issue resolution.
- Provide accurate status reports to the Project Controls group.
- Ensure accurate records are retained and transmitted to ER Records Center.
- Assist in developing project Closeout Reports.
- Perform remediation waste volume tracking.

2.1.4 Characterization and Remediation Subcontractors

The Characterization Subcontractor provides sampling and analysis services in accordance with the Statement of Work (SOW) to Provide Site Characterization Support to K-H ER and Facilities Disposition Projects (Solicitation #KH00258). The Remediation Subcontractor performs remedial activities, as described in the SOW to Provide Remediation Support to the K-H ER Program (Solicitation #KH00259). All work is planned and executed under the technical direction of the ER Program.

The Subcontractors have dedicated onsite managers who direct and control field activities. The Characterization Subcontractor is responsible for performance, safety, compliance, and quality for characterization activities as well as effective coordination with K-H and the Remediation Subcontractor. The Remediation Subcontractor is responsible for performance, safety, compliance, and quality for remedial actions as well as waste management and effective coordination with K-H and the Characterization Subcontractor.

In addition, the Subcontractors are responsible for:

- Ensuring projects are performed within approved scope, schedule, and budget;
- Directing and controlling project implementation;
- Constantly looking for ways to improve work processes;
- Identifying activities within their areas of responsibility that require planning, and collecting available information for each activity;
- Preparing Subcontractor HASPs, including JHAs, based on project-specific hazards and the ER Program Auditable Safety Analysis (ASA);
- Developing task-specific JHAs and HASP Addenda with input from ER Field Project Managers and Site subject matter experts (SMEs) to define activity hazards and select appropriate work controls;
- Preparing Subcontractor FIPs (Remediation Subcontractor only) as required for Remediation tasks with input from ER Field Project Managers and SMEs;
- Developing task-specific FIP Addenda with input from ER Field Project Managers and SMEs to define work activities;
- Coordinating and supervising staffs;
- Mobilizing and maintaining a trained, committed, and qualified work force;

- Obtaining necessary resources to perform work scope in a timely manner;
- Ensuring that their management teams are made up of the properly-qualified safety, QA, and waste management personnel and SMEs;
- Maintaining up-to-date training records that can easily be accessed to verify that workers are current on the required training;
- Maintaining safety statistics and provide accident reports;
- Participating fully in fact-finding meetings, lessons learned, and corrective action plans as required;
- Conducting daily toolbox and safety meetings including lessons learned from previous daily activities and tasks;
- Conducting daily equipment inspections;
- Generating and maintaining records, logs and logbooks;
- Providing reports to the CTR at the intervals stated in the SOW;
- Managing remediation wastes in accordance with Site requirements; and
- Scheduling and managing RCTs (Characterization Subcontractor only).

2.1.5 Subject Matter Experts

The ER Program organization includes SMEs in key areas. The SMEs are available to provide guidance and direction in their areas of expertise to assure consistency and continuity throughout the ER Program. The current list of SMEs is provided in Table 1.

Table 1. ER Program Subject Matter Experts

Subject Matter Area	Subject Matter Expert	Extension
Administrative Record	Karen Griggs	4743
Caps and Covers	Tom Lindsay	5705
Data Quality	Steve Luker	7291
Deactivation & Decommissioning (D&D)	Dyan Foss	7577
Document Control	Doug Shafer	5976
Geographic Information Systems (GIS)	Wendell Cheeks	7707
Historical Release Report (HRR)	Nick Demos	4605
Hydrogeology	Dan Reeder	3209
Integrated Work Control Program (IWCP)	Tom Lindsay	5705
Management Assessments of Readiness (MARs)	Sherry Lopez	3753
Occupational Safety & Industrial Hygiene (OS&IH)	Andre Gonzalez	6727

Table 1. ER Program Subject Matter Experts

Subject Matter Area	Subject Matter Expert	Extension
Operations Plans/Procedures/Closeout Reports	Catherine Madore	3692
Process Waste Lines	Craig Cowdery	2506
Procurement	Sherry Lopez	3753
Project Control	Doug Shafer	5976
Radiological Engineering	Chad Blake	5909
Remedial Action Decision Management System (RADMS)	Lee Norland	5223
Remedial Investigation/Feasibility Study (RI/FS)	Mike Anderson	3263
Risk Assessments	Jere Millard	4633
RSOPs and RSOP Notifications/SAPs and SAP Addenda	Susan Serreze	2677
Soil Disturbance Permits	Nick Demos	4605
Training	Carol Darrow	6144
Waste Management	Mark Burmeister	5891
903 Pad/Lip Area	Steve Paris	3656

2.2 Site Support Organizations

The ER Program actively interfaces with the numerous Site organizations to complete the ER work scope. Following are brief descriptions of these organizations.

2.2.1 Deactivation and Decommissioning Organizations

D&D is performed by two Site organizations: The D&D Program organization and the Industrial Building D&D organization. The D&D Program is responsible for structures and infrastructure associated with the Site's plutonium processing buildings (i.e., Buildings 371/374, 707, 771/774, 776/777). Industrial Building D&D is responsible for all other site structures and infrastructure. It is estimated that 90 percent of the Site's contamination release sites that may require soil remediation are associated with Site structures and infrastructure.

ER works with D&D to achieve an integrated process to minimize risk to workers and the environment, minimize generation of remediation wastes, streamline technical processes, and reduce project costs.

In general, ER characterization begins during facility D&D. In the event a facility with a high potential for UBC is decommissioned well before scheduled soil remedial actions, ER may specify that facility slabs be left in place to provide continued containment of potentially contaminated soil. This decision is made on a case-by-case basis, documented in writing with concurrence from both groups, and included in the Site's AR. The requirements for leaving a facility slab in place are determined by ER. If slab removal is delayed, Site Services provides surveillance and maintenance of the facility slab until it is removed. The handoff from D&D to Site Services is documented in writing between D&D, ER, and Site Services.

2.2.2 Material Stewardship Project

The Material Stewardship Project is responsible for Site waste management activities. ER works closely with Material Stewardship on waste characterization, packaging, interim storage, transportation, and offsite disposal issues. Of critical importance is the ability to move ER remediation waste from the remediated area to onsite storage areas or offsite destinations. Additionally, ER works with Material Stewardship to remove packaged wastes that are currently located in waste storage facilities within IHSS and PAC boundaries.

Project interface points and responsibilities include the following:

- ER informs Material Stewardship of upcoming projects, potential waste types, and volumes prior to the start of remediation projects.
- Material Stewardship assigns a Waste Requirements Representative (WRR) who is responsible for providing waste management guidance and assistance to ER.
- The WRR issues Waste Generating Instructions (WGIs) for waste streams, identifying waste characteristics, U.S. Department of Transportation (DOT) packaging and label requirements, waste packing instructions, characterization requirements for treatment and disposal, and documentation requirements.
- ER is responsible for waste characterization, segregation, and packaging, and for entering current information into the Waste and Environmental Management System (WEMS) before the waste is transferred to Material Stewardship.
- Material Stewardship is responsible for onsite storage, transportation, and offsite disposal of ER wastes.

2.2.3 Site Services

The Site Services organization is responsible for maintaining the Site's infrastructure through Site closure and for:

- Providing utility drawings and locating services in advance of soil disturbance activities;
- Providing security, fire, emergency medical, road, and maintenance support services;
- Operating and then closing the water supply and sanitary sewer systems. If the water supply system is closed before ER activities are complete, ER will be required to provide water for dust suppression, decontamination, and other uses;
- Operating and then closing the electrical power system. After the power system is shut down, ER staff will be required to provide generators to meet continuing power requirements for ER field operations; and
- Operating and then closing the storm drain systems. Some components of the storm drain system may be maintained or modified as part of long-term stewardship needs after Site closure.

2.2.4 Other Site Support Organizations

In addition to the organizations described above, numerous other K-H organizations provide support to assist ER with Site Closure. These organizations include, but are not limited to:

- Environmental Compliance is responsible for environmental program management, permitting, and compliance.
- Environmental Media Management is responsible for compliance monitoring of environmental media including groundwater, surface water, air, and soil. This organization provides monitoring data used by ER to make remedial action decisions. The monitoring requirements for the remedial actions will be developed in conjunction with this organization.
- Engineering provides support in developing and reviewing engineering designs and specifications, and assists in the development of work controls in compliance with IWCP requirements.
- The Analytical Services Division (ASD) is responsible for identifying and contracting with offsite laboratories that meet the Site's quality assurance requirements for producing defensible data. This organization also sets the sampling requirements, maintains an analytical database, provides input regarding appropriate analytical suites, and assists in resolving analytical data issues.
- Occurrence Notification and Lessons Learned groups are used to identify and report project safety, compliance, and security incidents, and to identify and publish lessons learned.
- Communications/Public Relations is responsible for assisting with the clear communication of information to stakeholders. The Site has K-H and DOE Communications Departments. These groups schedule and facilitate public meetings and coordinate dispersal of information to the public.

3.0 TRANSITION FROM D&D TO ER

Many ER projects are associated with, and transition from, D&D projects. D&D activities are coordinated with ER activities to achieve an integrated process that minimizes risk to workers and the environment, minimizes the generation of remediation wastes, streamlines technical processes, and reduces costs.

ER and D&D projects are coordinated as follows:

- The ER schedule is integrated with the D&D schedule to allow for the planning and initiation of ER characterization activities during facility decommissioning.
- Facility demolition and ER activities proceed as a continuous two-phase operation culminating in the closeout of associated IHSSs, PACs, and UBC sites.

The overall responsibilities of the D&D organizations and the ER Program are provided in Table 2 and discussed in more detail in the following paragraphs.

3.1 Site Characterization

D&D is responsible for characterizing all building materials sufficiently for facility decommissioning and waste dispositioning. This includes researching building history to determine how the building and slab will be characterized. D&D will share applicable information with ER to facilitate identification, characterization, and/or remediation of associated soil contamination. ER will provide information to D&D regarding the IHSSs and PACs near the building and the potential for UBC. D&D will use this information to identify and assess potential impacts to decommissioning activities.

3.2 Utilities

Any lines that carried fluids, either liquid or gas, are assumed to be utilities under the terms of the Contract, including sewer, water, process waste lines, and steam lines. The telephone, alarm, and electrical systems will not be considered utilities for this purpose. K-H Procurement personnel are clarifying the definitions of utilities that need to be removed.

D&D will remove utilities located inside structures, and utilities located beneath structures, to a minimum depth of three feet below the existing grade. ER will remove utilities between structures. In the case of trailers, utilities will be removed to at least three feet below the existing grade, or removed to the nearest junction. In certain instances, it may be more practical and cost effective for D&D to remove the utility to the nearest junction even if the junction is located outside the project area. These should be evaluated by D&D and coordinated with ER.

Underground utilities that remain (i.e., utilities below three feet of existing grade) will be cut off at the building foundation, or the nearest junction outside of the building, and sealed with a permanent, watertight seal to disrupt potential pathways to surface water. This may require removal in excess of three feet below grade.

D&D will survey utility line termination point locations, including abandoned piping, using land-based surveys or a GPS, and record the data. A map of these locations will be provided to ER and to the Site's Utility Group at project completion and should be included in each Decommissioning Project Closeout Report.

Table 2. D&D and ER Responsibilities

Closure Activity	Responsible Organization ^a	
	D&D	ER
Perform site characterization	Characterize building materials.	Characterize soils in IHSSs, PACs, and UBCs.
Disposition utilities	<p><u>Inside buildings</u> – remove utilities to foundation walls.</p> <p><u>Beneath buildings, inside foundation walls</u> – remove utilities to a minimum depth of three feet below existing grade^b; disrupt potential pathways to surface water (e.g., foam or grout utility corridors); survey and record termination points.</p>	<p><u>Outside foundation walls</u> – remove utilities to a minimum depth of three feet below existing grade^b; disrupt potential pathways to surface water (e.g., foam or grout utility corridors); survey and record locations.</p>
Disposition process waste lines	Flush and/or drain process waste lines to RCRA Stable configuration; disconnect and remove process waste lines to building foundation; seal open ends of lines (e.g., flange, foam, grout); survey and record termination points; disposition valve vaults in accordance with Component Removal RSOP.	Disposition remaining process waste lines (e.g., lines located between buildings and valve vaults) in accordance with the ER RSOP; disrupt potential pathways to surface water; survey and record locations.
Disposition tank systems	<p><u>Tanks located inside structures</u> – drain, flush, stabilize, isolate, and remove tanks and ancillary equipment (e.g., pumps, valves, piping); characterize and disposition structures; remove all structures to three feet below existing grade.^b</p> <p><u>Aboveground tanks</u> – drain, flush, stabilize, isolate, and remove tanks and ancillary equipment.</p> <p><u>Direct-buried underground tanks</u> – drain, flush, stabilize, and isolate tank systems; remove aboveground ancillary equipment (e.g., pumps, piping).</p>	<p>Remove piping and other ancillary equipment located between structures; characterize and remediate contaminated soils.</p> <p>Remove piping and other ancillary equipment located between tanks and structures; characterize soils; remediate contaminated soils.</p> <p>Remove tanks; remove belowground piping and other ancillary equipment located between tanks and structures; characterize soils; remediate contaminated soils.</p>
Disposition container storage units and treatment units	<p><u>Units located inside structures</u> – close RCRA container storage units and treatment units in accordance with applicable RFCA decision document (i.e., DOP or Component Removal RSOP).</p> <p><u>Units located on asphalt or concrete pads</u> – remove fixed equipment, temporary structures (e.g., tents), and fencing (where applicable).</p>	<p>Remove asphalt and concrete pads; characterize soils; remediate contaminated soils.</p>

Table 2. D&D and ER Responsibilities

Closure Activity	Responsible Organization ^a	
	D&D	ER
Disposition structures	Remove structures and slabs to a minimum depth of three feet below existing grade ^b ; decontaminate or remove contaminated structures regardless of depth; disrupt potential pathways to surface water (e.g., foam or grout foundation drains).	Characterize and remediate contaminated soils.
Backfill, grade, and revegetate excavated areas	Backfill building excavation areas (e.g., basements); grade and seed in accordance with D&D project specifications.	Backfill remediated areas; grade and seed in accordance with Section 6.10.7; perform final Site regrading and revegetation in accordance with the Site Land Configuration Study.

^a Responsibilities may change, depending on individual project requirements. In each case, D&D and ER will coordinate closely to ensure completion of closure activities.

^b Existing grade is defined by the ground surface in contact with the exterior of the building. Where grade is uneven, or where dirt is mounded against structures, existing grade is defined as the average grade of the area, excluding the mounded portions. The Site Land Configuration Study will specify the final grade.

Prior to decommissioning, D&D will flush sanitary sewer lines with clean water to the main sanitary sewer line. Flushing will consist of high-volume, short-duration clean water flows of at least five times the total volume of the sewer line being flushed. Hydrolasing may be used when practical to minimize the amount of water used for flushing and to better clean the lines, particularly for large-diameter pipes. After flushing is completed, the line will be isolated at the sanitary sewer main line outside the building and all openings to the sanitary sewer in the building will be sealed with a watertight seal to prevent accidental releases to the sanitary sewer system. D&D will remove sewer lines that are less than three feet below grade within the project boundaries and then seal any open ends with a permanent, watertight seal. The portions of sewer lines that will be removed during decommissioning will not be flushed.

3.3 Process Waste Lines

The process waste lines include the tanks, piping, and ancillary equipment associated with the aqueous waste transfer system (i.e., new process waste lines and old process waste lines). The new process waste lines consist of four underground, double-walled transfer lines that connect collection tanks in various Site buildings to collection tanks in Building 374. The process waste lines run through a series of 20, below-grade concrete pits, or valve vaults, that are equipped with secondary containment and leak detection systems designed to collect large spills or influxes of groundwater or precipitation.

The new process waste lines are part of RCRA Unit 374.3. As described in the Component Removal RSOP, "All RCRA-regulated units or portions of RCRA-regulated units located within the buildings will be closed prior to facility demolition. Portions of units located beneath the building slab or outside the building footprint (e.g., valve vaults and underground piping

associated with the Building 374 process waste system) will be taken to a RCRA Stable condition during decommissioning and closed in accordance with the ER RSOP or other RFCA decision document, when approved.”

D&D will drain and remove the new process waste lines and ancillary equipment located inside the buildings. Lines will be cut at the outer building wall or nearest valve vault and capped or sealed with a watertight permanent seal. Underground lines will be drained to a RCRA Stable configuration. Termination points will be surveyed using land-based surveys or a global positioning system (GPS) and recorded. A location map will be provided to ER at project completion and will also be included in each Decommissioning Project Closeout Report.

D&D will decommission the valve vaults in accordance with the Component Removal RSOP. ER will disposition any remaining new process waste lines and remediate associated contaminated soils in accordance with the ER RSOP.

The old process waste lines are no longer in use and were left in an unknown state. ER will disposition these lines in accordance with the ER RSOP. Soil contamination associated with the process waste lines is the responsibility of ER.

3.4 Tank Systems

D&D will drain, flush, stabilize, isolate, and remove RCRA and non-RCRA tanks and ancillary equipment located within their buildings and other structures (e.g., tanks inside valve vaults or other concrete structures).

D&D will also drain, flush, stabilize, and isolate their direct-buried underground storage tanks, in preparation for handoff to ER, which will be responsible for removing the tanks and ancillary equipment, and remediating any contaminated soils.

3.5 RCRA Container Storage Units and Treatment Units

D&D will be responsible for closing the RCRA container storage and/or treatment units located within their respective buildings.

D&D and ER will share responsibility for closing container storage and treatment units located on asphalt or concrete pads (e.g., Unit 750.1, located on the 750 Pad; and Unit 15, located on the 904 Pad). In these cases, D&D will remove fixed equipment, temporary structures (e.g., tents), and fencing (where applicable), and ER will remove the pads and remediate any contaminated soils.

3.6 Structures

Structures include concrete slabs, underground and above ground storage tanks, steam line stanchions, manholes, utility vaults, valve vaults, vehicle barriers, building foundations, tunnels, and similar items. D&D will remove structures to a minimum of three feet below the existing grade. In addition, all contaminated structures or portions of structures will be removed regardless of depth. Contaminated structures will be removed in a way that does not release hazardous or radiological contaminants to the environment.

If left in place, structures or portions of structures must meet unrestricted release criteria, regardless of depth. Even if structures meet unrestricted release criteria, D&D may choose to remove smaller structures rather than cut them off three feet below grade. Underground utilities associated with these structures will have the same requirements as those associated with

buildings. Slab removal over contaminated areas will be coordinated closely with remediation of the underlying contaminated soils.

Uncontaminated structures that are more than three feet below the existing grade, or as specified in the Site Land Configuration Study, may be left in place. The building characterization data, generally provided in the Pre-Demolition Survey Report, will be used to determine which structures meet unrestricted release criteria and may remain in place.

D&D will break foundation drains to disrupt pathways to surface water. In addition, D&D will backfill or seal tunnels, vaults, tanks, and similar structures to disrupt potential pathways to surface water. In certain situations, soil may be used as backfill with the concurrence of ER. Recycled concrete backfill will not be used to fill tunnels because the recycled concrete will actively transport groundwater and act as a preferential pathway for groundwater flow.

ER will determine if contaminated soils are associated with these structures. If contaminated soils are associated with these structures, backfill will not take place until after the contaminated soils are removed.

Fence posts and utility poles are not considered structures. These may be cut off at the ground surface or totally removed at the discretion of D&D. In contaminated areas it is preferred that the fence posts and utility poles be removed. ER will identify contaminated areas.

Sidewalks will be dispositioned on a case-by-case basis. In general, it is more cost effective to the Site if D&D removes the sidewalks. However, some sidewalks must remain in place for safety reasons; therefore, sidewalk removal will be coordinated with ER. ER will disposition roads, sidewalks, and parking lots remaining after decommissioning, as part of the Site Land Configuration Study.

Erosion and water controls, such as run-on and run-off controls established for decommissioning activities, are also expected to be effective for ER activities. If possible, these will be left in place until remediation is complete.

Laydown areas and stockpile areas will be coordinated with the ER representative to determine the most appropriate locations

3.7 Backfill, Grading and Revegetation

D&D and ER will not make any special effort to conserve the ornamental plantings found on Site. Native trees and vegetation will be retained as practical.

When decommissioning is complete, D&D will backfill and compact soil in accordance with project specifications. Backfill will consist of clean soil or recycled clean concrete as per the RSOP for Recycling Concrete. If recycled concrete is used, three feet of clean fill will be required over the concrete to facilitate final grading.

The area will be roughly graded to match the surrounding topography and seeded to minimize erosion, as described in Section 6.10.7.

3.8 Communications

ER and D&D will work closely to ensure the overall scope is completed efficiently and effectively. Within 30 days after completion of a D&D project, ER will receive maps showing location and depth of the remaining foundations and other structures, location of abandoned utilities, and areas where structures with high levels of contamination were removed.

To facilitate communication, ER primary and secondary contacts have been assigned for D&D and other Site programs, as shown in Table 3. These individuals will be involved in planning efforts, particularly in the scheduling aspects.

3.9 Facility Ownership

ER will not accept responsibility for any facility until the start of the anticipated remedial action. The exceptions are the 903 Pad, which has restricted access and is currently ready for a remedial action, and the groundwater treatment systems installed by ER.

At the time of transfer, ER Facility Managers and Building Managers will be assigned by the ER Program Manager. Transfer of ownership will be accomplished through completion of the Real Property Transition Checklist in Appendix A of the Real Property Management Manual (K-H 1999a), which will be signed by both the receiving and transferring organizations. This checklist documents whether the facility meets all Site requirements for safety and compliance at the time of transfer.

Table 3. ER Program Points of Contact

Program/Project	Lead	Alternate
D&D	Dyan Foss x7577	Annette Primrose x4385
Environmental Media Mgmt.	Dyan Foss x7577	Lee Norland x5223
Analytical Services Division	Marla Broussard x6007	Susan Serreze x2677
Material Stewardship	Marla Broussard x6007	Lane Butler x5245

4.0 ER PROJECT PLANNING

The purpose of this section is to provide an overview of the ER Program planning process.

4.1 ER Project Planning Documents

The objective of the ER Program is to close RFETS in a safe and environmentally responsible manner. To accomplish this objective, the ER Program has developed a streamlined approach to the characterization and remediation of contamination release sites at RFETS and prepared a series of programmatic documents that replace numerous project-specific documents (see Figure 3). Several RFCA decision documents are being used for the majority of ER activities. These have been reviewed and approved by the regulatory agencies and stakeholders in accordance with applicable RFCA requirements:

- ER RSOP (DOE 2002b): Addresses contaminated soil and associated debris remediation at IHSSs, PACs, UBC Sites, and other areas, as necessary. The ER RSOP also addresses routine remediation of buried pipelines, drains, slabs, foundations, and underground storage tanks. It is anticipated that excavation and offsite disposal will be the preferred option for most soil and debris remediations including buried pipelines, drains, slabs, and foundations. However, in-place stabilization and/or decontamination may also be employed if, on a project-specific basis, it is deemed safer and more practicable.
- RSOP for Asphalt and Soil Management (DOE 2001b): Streamlines and documents the management and disposition of soil and asphalt into one process regardless of the location or activity leading to the disturbance (e.g., maintenance, construction, characterization, remediation). A decision tree analysis, based on RFCA Tier I and Tier II ALs, provides management options that primarily depend on the concentrations of constituents in the soil. The acceptance criteria for backfill are also defined in this RSOP.
- RSOP for Recycling Concrete (DOE 1999): Addresses the post-demolition disposition and placement of concrete and allows for the use of the recycled concrete as backfill if it is below unrestricted release limits, there are no impacts to surface water, the backfill is needed to meet the final grading requirements, and the area being restored has undergone verification/confirmation sampling. It is the ER Program's responsibility to establish the final grain size distribution and compaction specifications. Transportation, handling, and placement are also addressed in this RSOP.
- IA SAP (DOE 2001a) and BZ SAP (DOE 2002a): To streamline the characterization process, two major sampling and analysis plans have been written; one for the IA (i.e., the IASAP) and one for the BZ (i.e., the BZSAP). These two plans eliminate the need for approximately 150 project-specific sampling and analysis plans. The IASAP and BZSAP include data summaries of the known contaminant release sites in these respective areas. In addition, the SAPs contain the approach for the sampling, analysis, data evaluation, and management methods that allow for characterization to proceed in conjunction with remediation. This approach creates major schedule savings, but requires close coordination between characterization and remediation activities, and creates the need for expedited sample results.

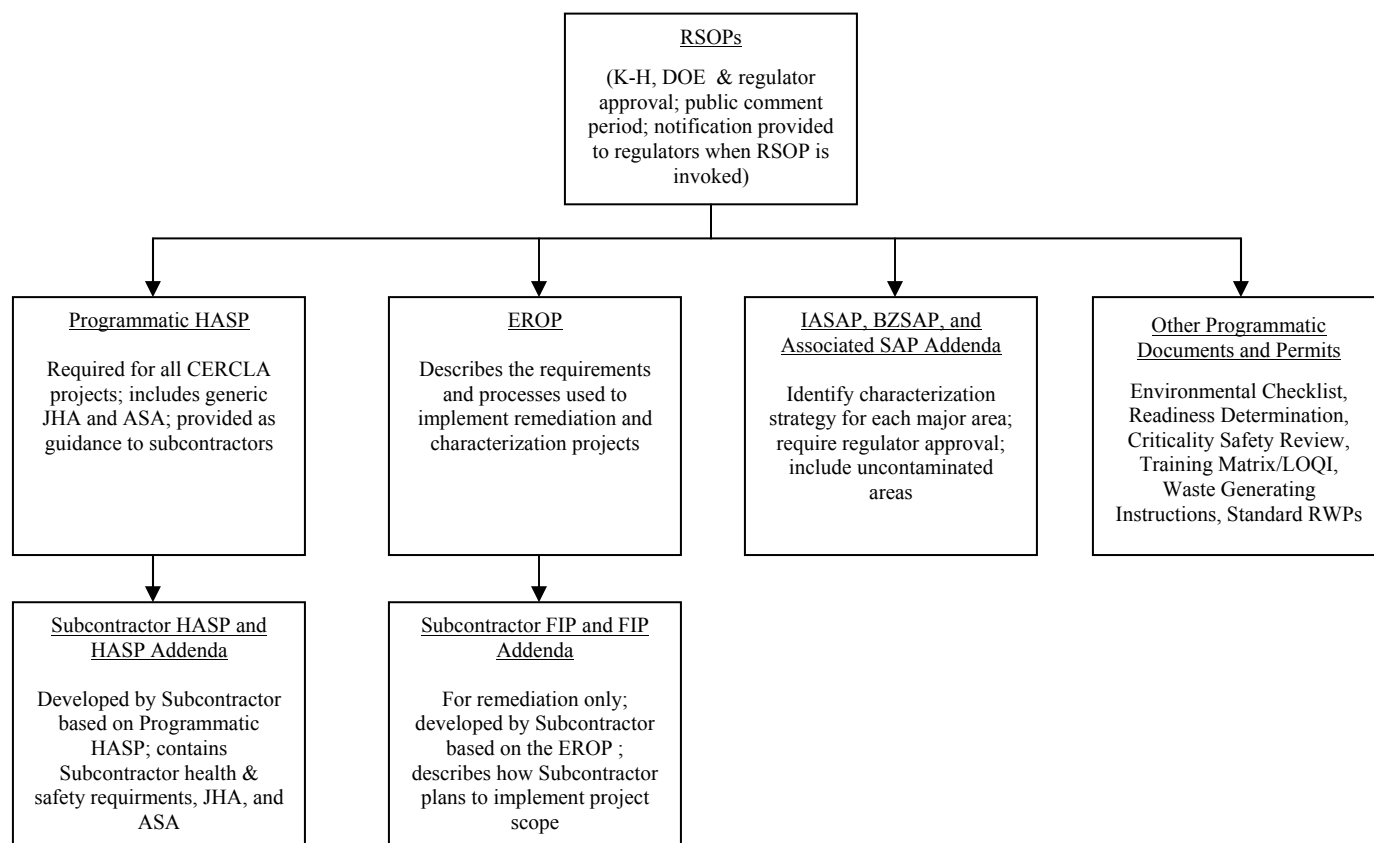


Figure 3. ER Project Planning Documents

In addition, other programmatic plans, permits, and authorizing documents have been developed to ensure consistent implementation of ER activities. These include:

- Programmatic JHA;
- Programmatic HASP, including ASA;
- Programmatic Site permits and other authorizing documents such as:
 - Environmental Checklist,
 - Readiness Determination,
 - Criticality Safety Review,
 - Training Matrix/List of Qualified Individuals (LOQI),
 - Waste Generating Instructions (WGIs),
 - Standard Radiological Work Permits (RWPs), and
 - Sampling documents (from RADMS).

Project-specific documents include:

- Subcontractor HASP and associated HASP Addenda, and
- Subcontractor Field Implementation Plan (FIP) and associated FIP Addenda.

4.2 ER Project Planning Process

Based on available funding and the D&D schedule, IHSS Groups, PACs, and UBC sites are identified for closure. The feasibility of completing the work is evaluated, and the project planning process is initiated. Figure 4 depicts the ER project planning process.

Projects are initiated by Integration & Engineering, with preparation and submittal of a SAP Addendum and RSOP Notification to the LRA. The SAP Addendum includes a summary of existing data, potential contaminants of concern (PCOCs), and sampling location maps for each IHSS Group, PAC and/or UBC scheduled for characterization and remediation in the coming fiscal year (FY). The RSOP Notification describes the site conditions, assumptions and remediation goals, and presents the remediation plan and stewardship analysis for each site.

Using the SAP Addendum and RSOP Notification, the Characterization and Remediation Subcontractors evaluate whether unique site-specific conditions or sampling activities warrant additions or modifications to the Remediation Subcontractor FIP and one or both of the Subcontractor HASPs. HASP Addenda and/or a FIP Addendum are then prepared, as necessary to account for the unique site-specific conditions and/or activities. ER then begins the process of preparing for and conducting site characterization and remediation activities, as described in Sections 5 and 6 of this EROP.

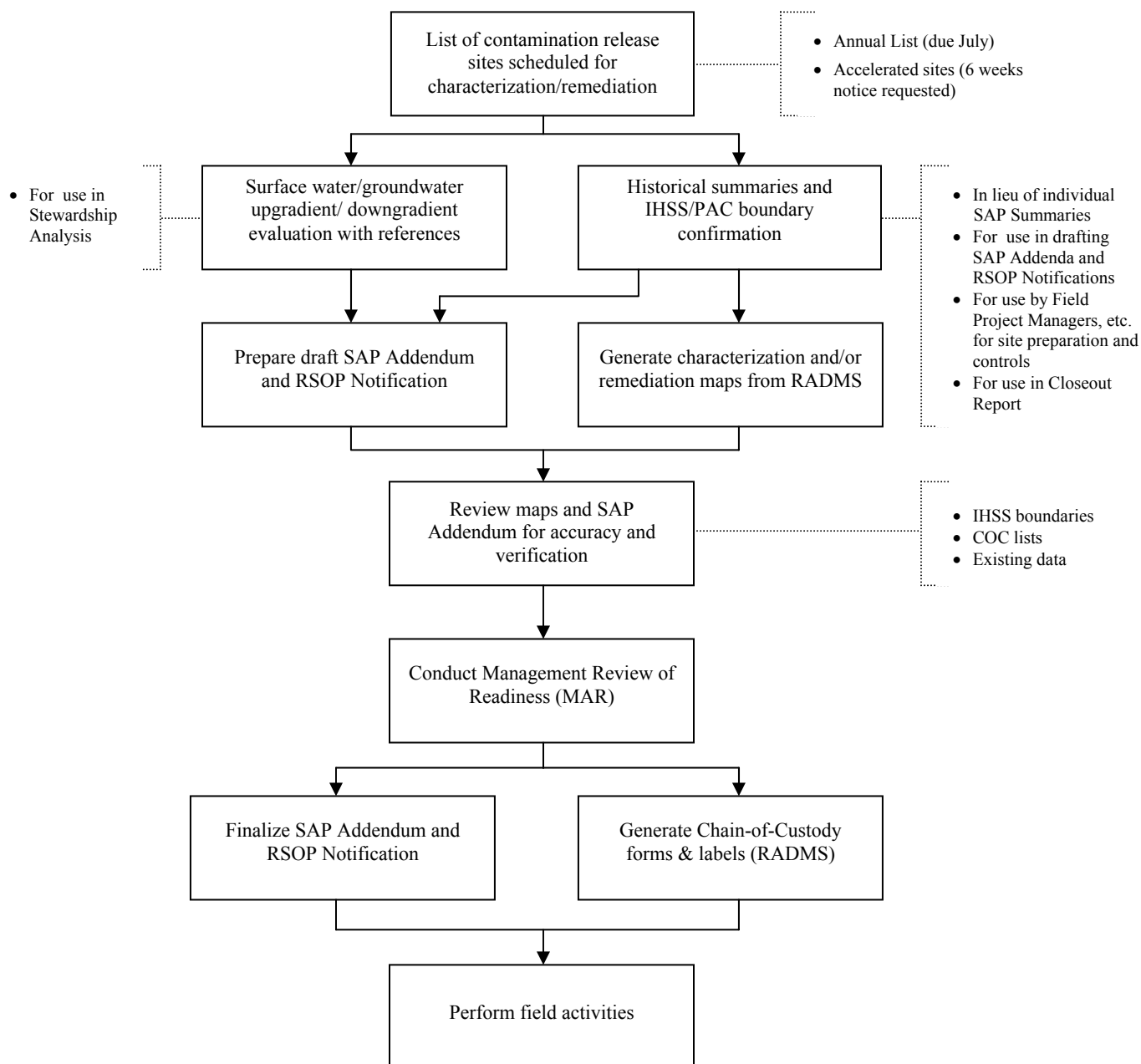


Figure 4. ER Project Planning Process

5.0 CONTROLLING PROGRAMS

ER activities are planned and executed in accordance with the Site ISMS, which provides the framework for ensuring that all work performed at RFETS is planned, analyzed, reviewed, approved, and performed safely. As described in the following paragraphs, ISMS is implemented through a variety of existing sitewide programs. Project-specific controls are described in Section 5.0.

5.1 Integrated Work Control

ISMS is implemented at the activity level through the IWCP per the requirements of the IWCP Manual. The IWCP Manual requires prior planning to define the scope of work, identify and analyze the hazards, identify and implement the appropriate work controls, and provide feedback for continuous improvement throughout the process. Additional information concerning the IWCP process is provided in Section 5.0.

5.2 Readiness Determination

ER fieldwork will not be started, or in some cases resumed, until the ER project has been brought to a state of readiness to conduct the work safely, and the state of readiness has been verified. For readiness purposes, work performed or controlled by ER, including work performed by Subcontractors, is subject to the requirements of two separate programs. K-H Independent Safety Oversight is responsible for readiness at the Site level per the requirements of the Readiness Determination Manual (RDM) (K-H 2000b). Additionally, ER performs a Management Assessment of Readiness (MAR) for all ER projects in accordance with the ER Program Management Assessment of Readiness procedure (K-H 2001d). ER Field Project Managers should consult these documents or contact the ER Readiness Coordinator to determine readiness determination requirements for specific ER projects.

5.3 Conduct of Operations

The RFETS Conduct of Operations (COOP) Program (K-H 2000c) provides a formal, disciplined approach to facility operations. ER activities will be performed in compliance with applicable COOP requirements, which are summarized in the COOP Checklist provided in Appendix A. The COOP Checklist is completed by the ER Field Project Manager as part of the MAR.

5.4 Nuclear Safety

The Site's Nuclear Safety Program management and staff review the FIP and FIP Addenda (as applicable) to ensure that planned activities may be performed within the Site's existing authorization basis (AB), (i.e., the Site SAR), and the established radiological controls are adequate to protect workers, the public, and the environment. In the event this review identifies activities that may be outside the approved AB, and may therefore present an Unreviewed Safety Question (USQ), a USQ Determination (USQD) is completed to evaluate activities with the potential to challenge the limits of a Site's AB. Activities identified as USQs are reviewed to determine whether additional safety controls are required to manage the hazards associated with the activity.

5.5 Criticality Safety

The Site's Criticality Safety Program (K-H 2000d) management and staff have reviewed the ER Closure Project Baseline (CPB) to ensure planned activities involving fissionable material (e.g., residual liquids from process piping) may be performed in compliance with established criticality safety controls. The applicable exemptions and requirements are outlined in JEH-003-01 (see Appendix B).

5.6 Radiation Protection

The Site's Radiation Protection Program (K-H 2000e) implements standards, limits, and program requirements for protecting workers from exposure to radioactive materials. The program is based on the principle of ALARA (i.e., as low as reasonably achievable) and provides for personnel dosimetry, surveillance and maintenance of engineered radiation protection systems, issuance of RWPs, and area surveillance and posting. Personnel exposures are formally tracked, recorded, and reported to each individual.

For ER projects, K-H provides qualified RCTs, who are managed and directed by the Characterization Subcontractor. The RCTs prepare the required RWPs, establish work control zones, provide related radiological postings, conduct pre-job radiological surveys, perform ambient air monitoring, and issue personnel dosimetry, as necessary, for each ER project.

5.7 Occupational Safety & Industrial Hygiene

The Site's Occupational Safety & Industrial Hygiene (OS&IH) Program (K-H 2001e) ensures that personnel exposures to physical, chemical, and biological hazards in the work environment are controlled by requiring job supervisors and OS&IH personnel to identify OS&IH hazards in the work area. Program safety and technical reviews are integrated into the work control process to ensure non-radiological OS&IH hazards (i.e., physical, chemical, biological) are identified and appropriate measures are instituted to protect the worker (e.g., engineered systems, personal protective equipment [PPE], personnel monitoring). The OS&IH Program incorporates the standards defined in 29 CFR Parts 1910 and 1926, and DOE regulation 10 CFR 850.

To ensure compliance with applicable OS&IH requirements, ER work is conducted in accordance with an approved HASP, which is updated, as necessary, to include new ER activities.

5.8 Transportation

The RFETS Transportation Program specifies safe and compliant packaging requirements for both onsite and offsite transportation of radioactive and hazardous materials to prevent releases and minimize accident consequences. The Transportation Program describes a process for incorporating packaging and labeling requirements into WCDs and it defines training requirements for personnel involved in the packaging and shipment of hazardous materials. The Transportation Program is implemented through the DOE-approved Site Transportation Manual (K-H 2000f) and the Offsite Transportation Manual (K-H 2000g).

5.9 Emergency Preparedness

The RFETS Emergency Preparedness Program (K-H 1999b) provides the procedures and resources necessary to respond to Site emergencies, including fires, hazardous material spills, and inadvertent criticalities. Early in the ER Program, the Site's trained emergency response personnel will be available to ensure worker and public safety during an abnormal event. However, later in the ER Program, as the Site's remaining buildings are demolished and utilities are removed from service, the Characterization Subcontractor and Remediation Subcontractor will be responsible for responding to project-specific emergencies. The Subcontractor's emergency response procedures will be included in the project-specific HASP.

5.10 Environmental Management

RFCA mandates incorporation of National Environmental Policy Act (NEPA) values into all RFCA decision documents. The RFETS NEPA group has completed the required environmental impact analysis for the full scope of characterization and remediation activities, including the cumulative impacts of characterization and remediation activities on sitewide closure activities and other major federal actions occurring within the vicinity of the Site. The results of this analysis are contained in the ER RSOP.

The Environmental Compliance group uses the RFETS Environmental Checklist to identify activities that may impact any of the Site's media-specific environmental programs (e.g., air, surface water, ecology), (see Section 6.4 for details). All ER activities are monitored by the Site's Environmental Media Management group in accordance with the Integrated Monitoring Plan (IMP) (K-H 2001f).

5.11 Quality Assurance

All work performed at RFETS is accomplished in accordance with the requirements of 10 CFR 830.120, Quality Assurance Requirements (the QA Rule); DOE Order 414.1, Quality Assurance; and the American National Standards Institute/American Society for Quality Control (ANSI/ASQC-E4). Applicable QA requirements are described in the ER Program Quality Assurance Program Plan (K-H 2001b).

6.0 PROJECT CONTROLS

This section describes the controls that are implemented to ensure ER field projects are performed in compliance with the Site's ISMS and the controlling programs described in Section 4. Figure 5 illustrates the process used to initiate a field project, assuming all the programmatic controls are in place. First, a walkdown is conducted to identify existing site conditions, expected hazards, and controls. The results of the walkdown are used to generate the task-specific WCDs, including the JHA, HASP Addendum, FIP Addendum, and project-specific permits, as discussed below.

6.1 Pre-Job Walkdowns

Prior to the start of any job, the project team, including the applicable Subcontractor(s), walk down the project site to document the conditions at the project start, detail the permits required for implementing the project, and detail the Site organizations that must be involved in the planning process (see Appendix C). The walkdown provides sufficient information that, when combined with available historical information, allows for the completion of the applicable implementation documents (e.g., FIP Addendum). During the walkdown, the required equipment is also identified.

6.2 Work Control Documents

All work at RFETS is planned and implemented pursuant to the requirements specified in the IWCP Manual. The IWCP applies to all Site employees and Subcontractors performing or supporting work at RFETS. Under the IWCP program, a WCD is developed to accomplish work, depending on the work scope, repetitiveness, and type of work to be performed.

- Type 1 Work Package - generally used for maintenance activities and may include engineering calculations or input but does not require engineering design. ER work may include some packages of this type but rarely (reference Chapter 4 of the IWCP Manual).
- Type 2 Work Package - required for work that necessitates engineering design support. (reference Chapter 4 of the IWCP Manual).
- Standard Work Package - used for work that is repetitive in nature (reference Chapter 5 of the IWCP Manual).
- Work Plan & Procedures - include, but are not limited to, standard operating procedures and operations orders, FIPs, SAPs, HASPs, waste management plans, quality assurance plans, and work permits. The majority of ER characterization and remediation work is controlled in accordance with work plans and procedures, and additional governing documents described in Chapter 6 of the IWCP Manual.
- Preventative Maintenance Work Packages - intended for projects that involve skill-of-the-craft involving preventative maintenance work activities (reference Chapter 7 of the IWCP manual).
- Craft Work Packages - specific to craft work onsite and are identified under Table 8.1 of the IWCP Manual by the activity description and corresponding trend code (reference Chapter 8 of the IWCP Manual).

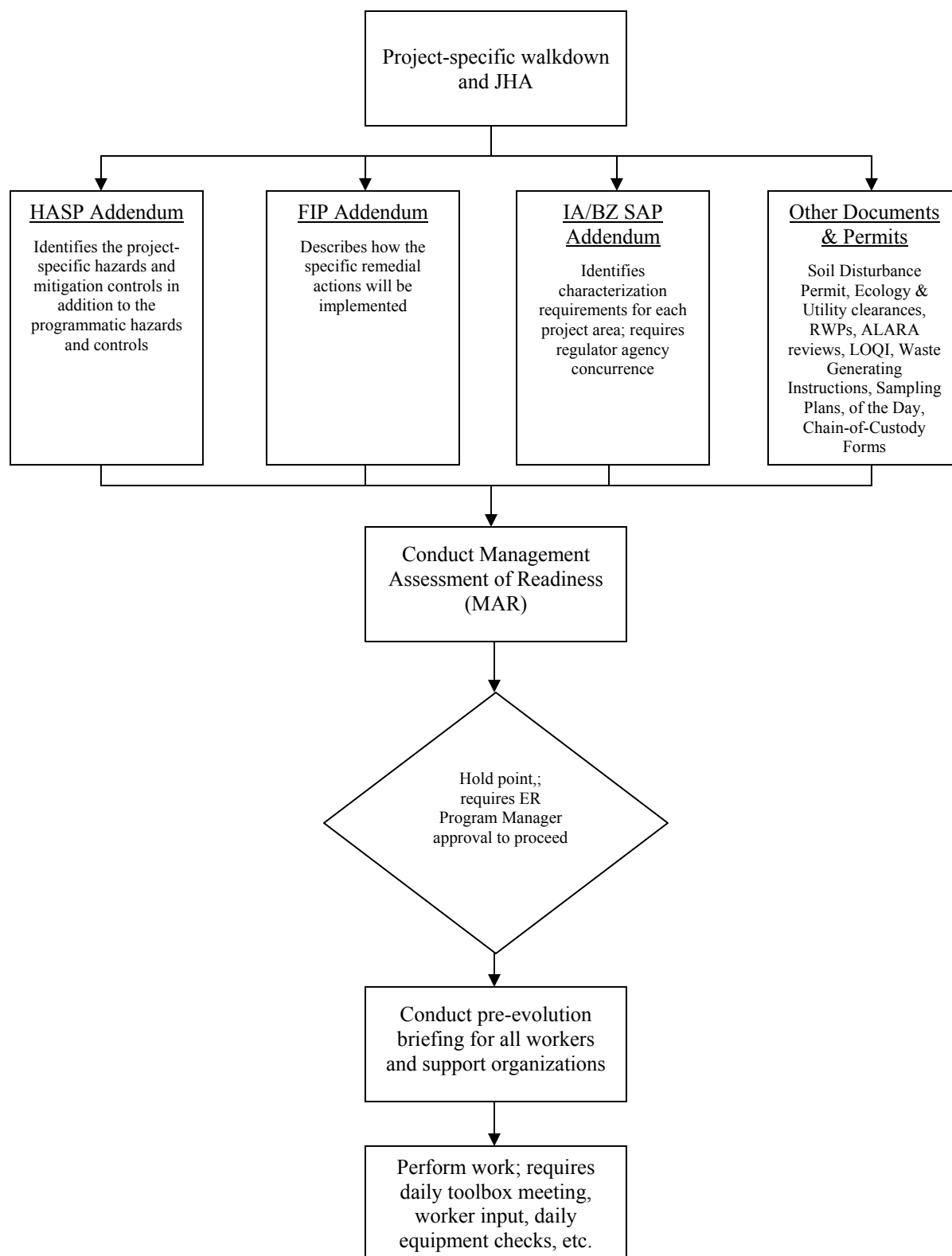


Figure 5. ER Field Project Work Controls

- Emergency Work - specifically identified by the Work Process Form (WPF) involving work that is categorized level 1 and requires immediate attention (reference Chapter 9 of the IWCP Manual).

ER work primarily falls under Work Plans & Procedures, although some instances may occur where a Type 1 or 2 Work Package is required. The following documents are generated for project specific-tasks, generally based on the results of the pre-job walkdown. These documents are generated so that duplication of information between documents is minimized.

6.2.1 SAPs and SAP Addenda

In accordance with the IASAP and BZSAP, prior to the beginning of each FY, a SAP Addendum is prepared for the contamination release sites that are scheduled for characterization in the upcoming year. The purpose of the SAP Addendum is to document specific sampling locations, contaminants of concern, and any additional data quality objectives, and sampling and analysis approaches for a specific IHSS, PAC, or UBC site. A SAP Addendum may also be prepared for additional or accelerated characterization activities, as necessary.

6.2.2 FIP and FIP Addenda

The Remediation Subcontractor will produce a FIP based on guidance provided by the ER Program. This document will provide the general guidance used for performing remediation activities at the Site. A FIP will not be required for characterization activities, as the project-specific guidance will be provided in the IASAP, BZSAP and the associated Addenda.

A task-specific or project-specific FIP Addendum will be generated by the Remediation Subcontractor based on the results of the pre-job walkdown. This Addendum will describe the specific approach that will be used to remediate the project site. The Addendum is expected to include maps of the project area, designate laydown and stockpile areas, describe erosion controls, as well as detail the remedial approach. In addition, the waste containers to be used and the temporary waste storage area will be designated. An outline of a typical FIP Addendum is provided in Appendix D.

6.2.3 HASP and HASP Addenda

An ER Program HASP has been developed to address potential hazards associated with planned ER Program activities. The HASP establishes guidelines to protect project personnel, collocated workers, the public, equipment, and the environment during implementation of field activities. All ER work activities will be performed in accordance with the Site Occupational Safety & Industrial Hygiene Program Manual. At a minimum, the Site OS&IH Program complies with the Occupational Safety and Health Administration's (OSHA) 29 CFR 1910 and 29 CFR 1926. In the event of regulatory changes or conflicting requirements, the most stringent requirement will prevail. ER work activities require a full-time health and safety representative or designee to be present onsite at all times when work is performed. The Remediation and Characterization Subcontractors will develop their own HASPs based on the ER Program HASP that will guide their work on Site.

A project-specific HASP Addendum will be prepared to supplement the HASP and address unique conditions specific to that project. The Characterization and Remediation Subcontractors will assess project-specific conditions for the upcoming FY and develop a HASP Addendum if modifications to the HASP are warranted. If the Subcontractor determines a HASP Addendum is not required for the specific project or task, a letter documenting this determination will be

submitted to K-H. An example HASP Addendum is provided in Appendix E. The HASP Addendum will be reviewed and approved by the K-H CTR prior to the start of a task and will be required reading for all personnel working on the project.

Each HASP Addendum will include a project-specific JHA. The project-specific JHA will identify the hazards associated with the particular activity and the mitigating measures to be taken to avoid the hazards. If a new activity or task is identified during the course of the project that is not covered by an existing JHA, the Subcontractor will prepare or modify the existing JHA describing the new activity and identifying the associated hazards and appropriate mitigating controls. The JHA for each activity will be reviewed by all personnel working on the activity. All JHAs must be approved by the K-H CTR before new activities are initiated.

6.2.4 Standard Operating Procedures

In addition to the FIP, HASP, SAP, and associated Addenda, ER Field Project Managers will use approved standard operating procedures to perform certain field work. These are listed in Table 4.

Table 4. Standard Operating Procedures

Procedure Number	Procedure Title
RMRS/OPS-PRO.064, Rev. 0	Pond and Reservoir Bottom Sediment Sampling
RMRS/OPS-PRO.069, Rev. 0	Containing, Preserving, Handling and Shipping of Soil and Water Samples
RMRS/OPS-PRO.070, Rev. 0	Equipment Decontamination at Decontamination Facilities
RMRS/OPS-PRO.081, Rev 0	Surface Water Sampling
RMRS/OPS-PRO.083, Rev 0	Industrial Effluent Discharge Sampling
RMRS/OPS-PRO.084, Rev 0	Operation and Maintenance of Stream-Gaging and Sampling Stations
RMRS/OPS-PRO.085, Rev. 0	Pond Sampling
RMRS/OPS-PRO.086, Rev.0	Sediment Sampling
RMRS/OPS-PRO.092, Rev. 0	Event-Related Surface Water Sampling
RMRS/OPS-PRO.093, Rev. 0	Discharge Measurement
RMRS/OPS-PRO.094, Rev. 0	Field Measurements of Surface Water Field Parameters
RMRS/OPS-PRO.101, Rev 0	Logging Alluvial and Bedrock Material
RMRS/OPS-PRO.102, Rev 0	Borehole Clearing
RMRS/OPS-PRO.103, Rev 0	Geophysical Borehole Logging
RMRS/OPS-PRO.104, Rev 0	Surface Geophysical Surveys
RMRS/OPS-PRO.105 Rev 0	Water Level Measurement in Wells and Piezometers
RMRS/OPS-PRO.106, Rev. 0	Well Development
RMRS/OPS-PRO.107, Rev. 0	Slug Testing
RMRS/OPS-PRO.108, Rev. 0	Measurement of Groundwater Field Parameters
RMRS/OPS-PRO.109, Rev. 0	Aquifer Pumping Tests
RMRS/OPS-PRO.112, Rev. 0	Handling of Field Decontamination Water and Field Wash Water

Table 4. Standard Operating Procedures

Procedure Number	Procedure Title
RMRS/OPS-PRO.113, Rev.0	Groundwater Sampling
RMRS/OPS-PRO.114, Rev. 0	Drilling and Sampling Using Hollow-Stem Auger and Rotary Drilling and Rock Coring Techniques
RMRS/OPS-PRO.115	Monitoring and Containerizing of Drilling Fluids and Cuttings
RMRS/OPS-PRO.117, Rev. 0	Plugging and Abandonment of Boreholes
PRO-1460-SS	Surface and Subsurface Soil Sampling Using Manual Collection Methods
RMRS/OPS-PRO.121, Rev.0	Soil Gas Sampling and Field Analysis
RMRS/OPS-PRO.122, Rev.0	Plugging and Abandonment of Wells
RMRS/OPS-PRO.124, Rev. 0	Push Subsurface Soil Sampling
RMRS/OPS-PRO.126, Rev. 0	Surface Water Data Collection Activities
PRO-1455-FDO	Field Decontamination Operations
PRO-487-MPCR, Rev. 0	Metals and PCB Characterization Procedure
PRO-488-BLCR, Rev. 0	Bulk Solids and Liquids Characterization Procedure
PRO-536-BCPR, Rev.0	Beryllium Characterization Procedure
PRO-543-ASD-002, Rev. 2	Initiation, Preparation, and Implementation of Chain-of Custody-Forms
PRO-908-ASD-004, Rev. 0	On-Site Transfer and Off-Site Shipment of Samples
PRO-1058-ASD-005, Rev.0	Environmental Data Management
PRO-1059-WELL-118, Rev 0	Monitoring Well and Piezometer Installation
PRO-1389-MDF	Main Decontamination Facility Normal Operations
PRO-947-Location/Surveying, Rev. 0	Location Code and Surveying Control
1-K92-RFP-94-001, Rev. 1	Well Control Program
RF/RMRS-98-200, Rev.0	Evaluation of Data for Usability in Final Reports
PRO-1457-UL	Use of Logbooks

6.2.5 Sampling Documents

Sampling events are planned and executed in accordance with the sampling strategy described in the applicable SAP and SAP Addendum. The Decision Management Team initiates the process by determining whether previous analytical data are available for the selected contamination release site. If previous data are available, and there is adequate sampling coverage to support the use of geostatistical methods to select additional characterization sampling points, RADMS is used to apply geostatistical methods to locate new sampling locations. If previous sampling data are not available for the selected site, or if existing data are inadequate, RADMS is used to apply standard statistical or biased methods to select the new sampling locations. In either case, the new sampling points are entered into RADMS, which generates a Project Sampling Plan (PSP), sample location map, sample container labels, and chain-of-custody forms. With the required sampling documents in hand, the Characterization Subcontractor performs sampling

activities in accordance with the PSP, enters the field data into RADMS, transmits this information to the Decision Management Team, and prepares the samples for shipment to the onsite or offsite analytical laboratory, as appropriate. Details concerning RADMS and ER project interfaces with RADMS, are contained in the RADMS Implementation Plan (K-H 2002a).

6.3 Soil Disturbance Permits

Soil disturbance permits are used to ensure project site conditions are evaluated prior to disturbing the soil. Two soil disturbance permits were issued in FY2001 to cover all characterization activities. One permit covers shallow excavations (less than 6 inches in depth) and the other permit covers deeper excavations. Figure 6 illustrates which of these permits is applicable and when a separate permit is required. For remediation work, annual soil disturbance permits are developed to include the remediation work planned for the year. Scope additions require generation of another soil disturbance permit. All work areas are cleared by the Ecology group and by an Excavation Specialist prior to the initiation of intrusive activities.

6.4 Environmental Checklist

An Environmental Checklist was prepared for the full scope of ER activities. As more detailed information becomes available for each project (e.g., expected duration of the project, heavy equipment to be used, wastes to be generated), it is reviewed by the Environmental Compliance group and additional project-specific controls are implemented, as appropriate (e.g., enhanced air monitoring).

6.5 ER RSOP Implementation Checklist

An ER RSOP Implementation Checklist (see Appendix F) is initiated by the ER Field Project Manager of each ER project, and completed as the project progresses, to ensure all ER RSOP requirements have been addressed. This checklist is signed by the ER Field Project Manager and ER Field Operations Manager.

6.6 Pre-Evolution Briefings

Prior to initiating a new field project, the ER and Field Project Managers conduct a comprehensive pre-evolution briefing (PEB), which includes a detailed discussion of the work to be performed, associated hazards and controls, safety precautions, expected upset conditions, and applicable emergency response procedures. The LRA is invited to participate in the PEB. During the PEB, the ER and Subcontractor Project Managers ask open-ended questions to ensure that all project personnel, including Subcontractor personnel, understand their roles and responsibilities as well as the hazards, controls, and actions to be taken in the event an upset condition occurs. All personnel involved in the evolution must attend the PEB. The PEB is documented in the Pre-Evolution Record provided in Appendix G. Where possible, for large projects, the PEB is videotaped to ensure that new workers receive the same information.

The ER and Subcontractor Project Managers repeat the PEB when any of the following conditions occurs:

- The evolution is suspended for more than 48 hours.
- The evolution is suspended by a significant upset condition.
- The scope of the evolution changes.

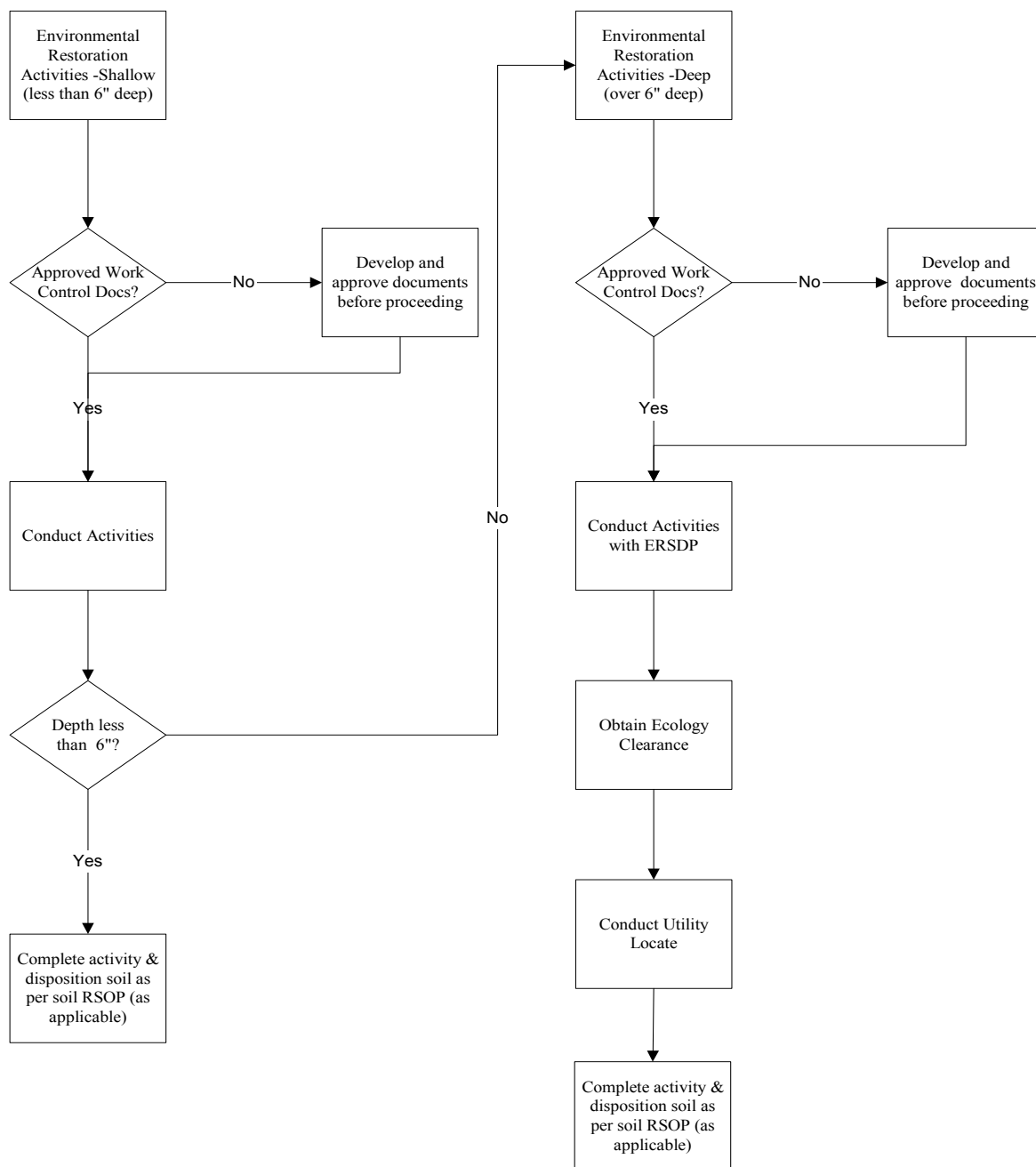


Figure 6. Use of Soil Disturbance Permits

The Characterization and Remediation Subcontract Project Managers are responsible for providing and documenting a PEB for new Subcontractor personnel before the new personnel are assigned to the project.

6.7 Daily Toolbox Meetings

At the beginning of each workday, the Characterization and Remediation Subcontract Project Managers conduct a toolbox meeting to discuss recent problems and lessons learned, and to review the scope, hazards, and controls associated with the work to be performed. All personnel involved in the evolution must attend the toolbox meeting. Attendance is documented in writing, as are the topics discussed at the meeting.

6.8 Training and Qualifications

Training and qualification requirements are established on a project-specific basis, using the guidelines presented in Table 5. A LOQI is then developed for each project based on the project-specific hazards and tasks to be performed. The LOQI contains the training requirements for each job or function anticipated for the project. In general, it is expected that, at a minimum, all field personnel will be required to complete 40-hour OSHA Hazardous Waste Worker, on the job training, and Radiological Worker II training in order to perform ER tasks. OSHA certificates must state that the training meets the requirements of CFR 1910.120.

The ER Field Project Manager must obtain training records to verify that the individuals assigned to the project have the required and up-to-date training prior to beginning field work and document this as part of the readiness assessment process. Tracking Subcontractor employees training requirements, scheduling training in advance of expiration and providing updated training records is the responsibility of the Subcontractor. Assistance in scheduling Site training can be obtained from the K-H Training group by contacting Carol Darrow at extension 6144.

In addition to ensuring the applicable training requirements are met, the Subcontractor must also ensure that Subcontractor employees are skilled in operation of the assigned equipment. This is particularly true in the case of articulated equipment. There have been two recent incidents where workers that were experienced with dump trucks and front-end loaders rolled articulated versions of the same equipment. It is imperative that workers understand fully how to safely operate any assigned equipment.

The training requirements listed in Table 5 are provided as guidance. Specific training requirements are determined for each project based on the type of work to be performed and associated job hazards. Specific training requirements are detailed in the project documentation. While Table 5 may not be complete, it is expected to contain the majority of the training requirements.

The training requirements are divided into three parts based on applicability. Part 1 contains training requirements that must be completed prior to any worker performing field tasks. Part 2 contains training requirements that are required for specific job classification. Part 3 contains training requirements that may be required for personnel regardless of their classifications, depending on the project-specific tasks and hazards present.

Table 5. ER Program Training Requirements

Part 1: Required for ALL Field Personnel			
Required Training and Certifications	Site-Specific Training	Subcontractor-Supplied Training	Applicability
General Employee Training	✓		Any worker with radiological worker training that requires access to the Site.
Radiological Worker II Training	✓		All workers except RCTs that require unescorted access in areas posted for radiological concerns. Allows access to CA, HCAs, airborne areas, soil contamination areas, RBAs, RAs, HRAs and VHRAs.
Hazardous Waste Operations and documented On the Job Training (OJT)		✓	Any worker engaged in hazardous substance removal or other related activities. Most characterization and remediation workers require 40-hour training. A few workers that are unlikely to be exposed over permissible exposure limits for the hazardous substances may require the 24-hour training. 8-hour refresher is required for continued qualification for both. All certificates must reflect that coursework met the requirements of CFR 1910.120.
Medical Surveillance and Approvals		✓	Required for all Hazardous Waste Operations workers.
Lockout/Tagout Worker Awareness Training	✓		Any worker who works under lockout/tagout but does not install lockout/tagout
Part 1a: Required for Field Supervisory Personnel			
Respirator Indoctrination for Managers and Issuers	✓		Any supervisor of workers whose job assignment requires a quantitative respirator fit.
Hazardous Waste Operations Supervisor		✓	Any supervisor who oversees fieldwork by remediation or characterization staff.
Radiological Control Manual Training for Managers	✓		Any manager who has radiological workers within their supervision.

Table 5. ER Program Training Requirements

Part 2: Training Required for Specific Job Classifications				
	Required Training and Certifications for Field Personnel	Site-Supplied Training	Subcontractor- Supplied Training	Applicability
Electricians & those who work on energized systems	Electrical Safety CPR		✓	Any worker assigned to be the second person by the two-man rule when work is being completed on energized systems operating at 50V or more.
	Electrical Safety for Electrical Workers	✓		Any electrical worker and their supervisor(s) as identified in OS&IH Ch 36.
	Lineman Bucket Truck Training		✓	Any lineman who operates a bucket truck and their supervisor(s).
	Lockout/Tagout Fundamentals	✓		Any worker or manager involved in the application, removal or maintenance of Lockout/Tagouts.
	Lockout/Tagout Practical Application	✓		Any worker or manager involved in the application, removal or maintenance of Lockout/Tagouts.
	Lockout/Tagout Supervision/Managers Brief	✓		Any manager or administrator of the Lockout/Tagout program and supervisors of workers that perform any of the Lockout/Tagout function.
RCTs	Radiological Control Technician Qualification Training	✓		All RCTs and supervisors of RCTs – this training replaces the requirements for radiological worker training for RCTs.
	Sealed Radioactive Source Control - RCT	✓		All RCTs and supervisors of RCTs.
Equipment Operators	Equipment operator training		✓	Specialized industrial equipment/vehicle operator (SIE/V) certification and DOT certification
Skilled Trades	Licenses, Certifications & other credentials (Federal, State, Local, etc.)		✓	Skilled trades required by the Statement of Work
Waste Generator	Waste Generator All Areas - Classroom	✓		All workers who package or manage waste.
	Waste Generator All Areas – Qualification	✓		All workers who package or manage waste.
	RCRA Waste Generator Annual Training (Checklist)	✓		All workers who package or manage waste.

Table 5. ER Program Training Requirements

Part 2: Training Required for Specific Job Classifications				
	Required Training and Certifications for Field Personnel	Site-Supplied Training	Subcontractor- Supplied Training	Applicability
	Waste Determination/WSRIC Classroom	✓		All workers who package or manage waste.
	RCRA Waste Management - Classroom	✓		All workers who package or manage waste.
	RCRA Waste Management - Qualification	✓		All workers who package or manage waste.
	Waste & Environmental Management System (WEMS)	✓		All workers who package or manage waste.

Table 5. ER Program Training Requirements

Part 3: Training Required for Specific Tasks or Hazards (regardless of job classification)				
	Required Training and Certifications for Field Personnel	Site-Supplied Training	Subcontractor-Supplied Training	Applicability
Office Work	General Employee Radiological Training	✓		Any worker requiring access to the site that does not require Radiological Worker Training.
	Unclassified Computer Training	✓		Any worker who requires access to the government owned unclassified computer system.
Asbestos Awareness	Asbestos Awareness		✓	Any worker involved in tasks described in Ch 19 of the OS&IH PM.
High Potential for Beryllium Exposure	Beryllium Worker	✓		Any worker performing work in Beryllium Regulated Areas or in areas where training is required by building management or by Ch 28 of the OS&IH PM.
High Lead Exposure	Lead In the Workplace		✓	Any workers who may be exposed to lead levels above the permissible threshold levels as identified by Industrial Hygiene.
Confined Space	Confined Space Entry Awareness		✓	Any worker who will perform work in confined spaces as described in OS&IH PM Ch 21.
Electrical Work	Electrical Safety for Non-Electrical Workers		✓	Any worker at risk of electric shock while working on or near energized electrical equipment or system as identified in OS&IH PM Ch 36.
Elevated Work	Fall Protection Awareness		✓	Any worker who works in an area where it is possible to fall 6 feet or more.
	Bucket Truck Safety		✓	Any user of bucket trucks and their supervisor(s).
	Aerial Lift Safety Training		✓	Any user of aerial lift and supervisor(s).
	Ladder Safety Awareness		✓	Any worker who uses a ladder (Fall Protection Awareness Training includes Ladder Safety Awareness Training).
Forklift Operation	Powered Industrial Truck Operator Training		✓	Any worker who operates a PIT.
	Powered Industrial Truck Safety Training Evaluation	✓		Any worker who operates a PIT (training is PIT specific).
	Powered Industrial Truck Hazard Awareness	✓		Any worker who operates a PIT.

Table 5. ER Program Training Requirements

Part 3: Training Required for Specific Tasks or Hazards (regardless of job classification)				
	Required Training and Certifications for Field Personnel	Site-Supplied Training	Subcontractor-Supplied Training	Applicability
High Noise Areas	Hearing Conservation		✓	Employees exposed to noise at or above an 8-hour time weighted average of 85 dBA shall participate in a training program that shall be repeated annually for each employee. Also includes any worker identified by Industrial Hygiene or Occupational medicine as participants in the program.
Hoist/Apparatus Work	Hoist Apparatus Training		✓	Any worker who operates hoists or cranes and supervisor(s).
Packaging and Shipping Tasks (samples and waste containers)	DOT Awareness	✓		Any worker and their direct supervisor/foreman involved in the packaging, marking, and transport of hazardous or radioactive materials.
	DOT Federal Motor Carrier Safety: Cargo Tie Down		✓	Any worker responsible for safe securement of materials on or in cargo vehicles.
Pressurized Systems	Pressure Safety Awareness		✓	Any worker who dismantles, operates, tests, maintains, inspects or transports 0 to 150 psig pressure systems and gas cylinders up to 4600 psi and supervisor.
Respiratory Protection	Respirator Fit		✓	Any worker who requires respiratory protection for performing assigned tasks. The types of respiratory protection include air-purifying respirators, powered air-purifying respirators, self contained breathing air, and supplied air. The types of respiratory protection the worker is qualified to use must be specified on the worker's qualification card.
	Medical Qualification		✓	Any worker who requires respiratory protection must have medical certification that they are fit for duty.
	Respirator Indoctrination - User		✓	Any worker who requires a respirator for performing assigned tasks.
	Self contained breathing air practical	✓		Workers using self-contained breathing air must also receive practical training from the fire department on its use.
Routine Access to Buffer Zone or Specific Buildings	Building Indoctrination	✓		Any worker who requires regular access to a building (training is building specific). Includes Buffer Zone Orientation
	Alarms, Sounds and Responses	✓		Any worker requiring unescorted access in PA and 400 and 800 areas.
Scaffolding	Scaffolding Safety for Builders/Erectors		✓	Any worker who erects, dismantles, inspects maintains, or modifies scaffolding or functions as the OSHA-defined "competent person" during scaffold use.

Table 5. ER Program Training Requirements

Part 3: Training Required for Specific Tasks or Hazards (regardless of job classification)				
	Required Training and Certifications for Field Personnel	Site-Supplied Training	Subcontractor- Supplied Training	Applicability
	Scaffolding Safety for Competent Persons		✓	Any worker who functions as the OSHA-defined "competent person" during scaffold use.
Spark producing or hot work activities	Fire Watch/Compensatory Measures	✓		Any worker designated to perform the duties of fire watch for the purpose of providing a compensatory measure due to an inoperable fire detection component.
Welding	Welding Safety		✓	Any worker and their direct supervisor/foreman that works around or uses welding equipment or those workers who function as the fire watch during welding operations.

6.9 Waste Management

Wastes generated as a result of ER activities include, but are not be limited to, contaminated soils, asphalt, concrete, and sections of excavated pipeline, as well as investigative derived material (IDM), oils contaminated with polychlorinated biphenyls (PCBs), asbestos containing material (ACM), PPE, and sanitary waste including office waste. The various waste streams are described in the Waste Stream and Residue Identification and Characterization (WSRIC) Book for Operable Unit (OU) Operations. ER wastes are accumulated, characterized, packaged, inspected, certified, and staged for offsite shipment in compliance with the ER Program Waste Management Plan (K-H 2002b).

6.10 Field Operations Controls

Field operations controls are primarily site-specific controls for protecting project personnel, the general public, and the environment. These controls are specified in the SOWs and in the project implementation documents (i.e., FIP, SAP, and HASP). Unless noted otherwise, the Subcontractors are responsible for implementing the field operations controls under the direction of the K-H CTR and the ER Field Project Manager, in accordance with K-H documents and applicable federal contracting regulations.

6.10.1 Notifications and Permits

Notifications are made prior to starting work to inform Site organizations of the location and type of work being performed. If the work is being performed in the BZ or outside buildings, including work on roofs, the organizations listed in Table 6 are notified prior to beginning work.

Table 6. Points of Contact for Buffer Zone Work

Organization	Phone Number
Wackenhut Services, Inc.	X2444 or via e-mail
RFETS Fire Department	X4337 or via e-mail
Shift Superintendent	X2914 or via e-mail

If requested, the above organizations are contacted by radio prior to commencing work. The ER Field Project Manager must also notify the Ecology group (Jody Nelson, X2231) to ensure compliance with threatened and endangered species requirements prior to conducting any field operations. The ER Field Project Manager documents notifications using a contact record or copies of e-mails to satisfy this requirement. Other notifications may be required depending upon the work being performed and the work location.

Work permits may be required for regulatory compliance (e.g., applicable NEPA, air quality, and surface water requirements), performing soil disturbances, and for radiological controls. A Soil Disturbance Evaluation Form is completed and submitted to the K-H Excavation Specialist by the ER Field Project Manager prior to performing any soil disturbance, drilling, trenching, or excavation. An RWP is developed for work in radiological areas.

6.10.2 Site Access

Project site access is controlled using appropriate site security barriers and postings. Work areas are established in accordance with the project-specific HASP Addendum. Requirements for site access controls are specified in the SOW and, as applicable, in the FIP and HASP.

Subcontractors are required to obtain RFETS access badges and electronic gate passes for members of the work crew the first day they arrive at RFETS. RFETS access control is also established for vendors, suppliers, trade persons, etc. that must visit the site infrequently to support project activities with the use of temporary visitor badges. These requirements are specified in the SOW.

6.10.3 Mobilization

Mobilization controls include equipment safety inspections and baseline radiological surveys prior to equipment delivery to the project site. K-H inspects equipment at the RFETS west entrance gate to ensure the equipment is in good working order and all applicable OSHA requirements are met. K-H performs baseline radiological surveys of equipment to document that the equipment is free of contamination prior to starting work.

Prior to demobilization, tools and equipment that were used for intrusive activities (i.e., ground penetrating) are surveyed for radiological contamination by K-H and may require decontamination prior to release from RFETS to offsite locations.

6.10.4 Radiological Controls

In accordance with RFETS Radiological Safety Practices Manual (K-H 2001g) radiological work activities are controlled with the use of RWPs. RWPs are used when handling any radioactive materials or materials with radioactive contamination, and when entry is required in areas controlled for radiological purposes. Requirements relating to RWPs are contained in Site Radiological Control Manual (K-H 2000g).

An ALARA Job Review is performed, as required, for non-routine activities in accordance with the Site ALARA Program Manual (K-H 1998a) to ensure that radiation dose and the spread of radioactive contamination is minimized.

6.10.5 Spill Response

During characterization and remediation activities, the potential exists to either create or encounter an unintentional spill to the environment. The Site's Emergency Response Spill Response Program is designed to establish a program to optimize a safe response to incidental and emergency situations with the intent of protecting project personnel, collocated workers, the public, the environment, and property in the event of spills, fire, or explosion. The Site's spill response procedures are described in the Spill Prevention, Control, and Countermeasures (SPCC) Plan (K-H 2001h), which the Site prepares under the Clean Water Act. At other Sites where an SPCC Plan is required, the SPCC Plan is the controlling document for response to spills. However, at RFETS, specific procedures and management plans have been adopted that direct such activities. As a result, the SPCC Plan is maintained primarily as a reference document for outside agencies to provide a description of the spill response procedures implemented at RFETS.

In addition to the SPCC Plan, the Site has prepared a Storm Water Pollution Prevention Plan (SWPPP) (K-H 2001i), which describes certain activities intended to minimize the release of pollutants into storm waters. The plan identifies a number of preventive measures under the broad category of best management practices (BMPs), which may be implemented to reduce adverse impacts to storm water and surface waters. Storm water is monitored in accordance with RFCA, and any results indicating a significant impact on surface water quality will trigger an evaluation of appropriate BMPs.

In general, ER field project personnel are limited to responding to incidental spills. The RFETS Fire Department responds to all other spills. Incidental spills are those where the substance can be safely absorbed, neutralized, or otherwise controlled by employees in the immediate release area at the time of the release. In addition, the release does not have the potential to become an emergency with a short time frame. Examples of incidental spills include the following:

- Gasoline, diesel, or hydraulic oil spills;
- Contaminated soil spills outside the Exclusion Zone (EZ)/soil containment area; and
- Decontamination or incidental water spills inside secondary containments.

Prior to responding to an incidental spill, field project personnel must:

- Notify the ER Field Project Manager, Safety Lead, and Radiological Lead (if the spill involves radioactive material);
- Know the chemical hazards of the substance spilled;
- Don the proper PPE; and
- Use equipment and decontamination methods that are compatible with the substance spilled.

Post-incidental spill response includes:

- Ensuring proper reporting in accordance with the RFETS Occurrence Reporting Process (K-H 1998b); and
- Conducting a briefing to address the cause of the spill, methods of preventing future spills, and ways to improve readiness and response.

6.10.6 Decontamination

Reusable remediation equipment is decontaminated in accordance with Field Decontamination Operations (K-H 2001j). Decontamination water generated during sampling is managed according to Handling of Field Decontamination Water and Field Wash Water (RMRS 1998). Excavation equipment is decontaminated between project locations at a BZ or IA Decontamination Pad in accordance with Equipment Decontamination at Decontamination Facilities (RMRS 1999).

6.10.7 Site Erosion Controls and Reclamation

Remediated areas are stabilized, as necessary, to prevent erosion. Stabilization techniques include grading, compaction, and revegetation.

Topsoil is reserved from areas that support vegetation at IHSSs and PACs. The top 18 to 24 inches of topsoil, except where the topsoil is contaminated, is stockpiled and separated from the remaining overburden material. Topsoil stockpiles are protected from wind-borne weed seed sources and wind erosion by covering the stockpile with tarps or a mulch-stabilizer. If topsoil is contaminated, soil is imported from a local supplier. Efforts are made to ensure the imported topsoil is free of weeds.

After decommissioning is completed, D&D backfills and compacts soil in accordance with project specifications. Once an area has been backfilled, the subsoil is ripped or scarified to a depth of eight inches to relieve soil compaction before topsoil placement. Backfill consists of clean soil or recycled clean concrete, as per the RSOP for Recycling Concrete (DOE 1999). If recycled concrete is used, three feet of clean fill dirt is required over the concrete to facilitate final grading of the site. The area is roughly graded to match the surrounding topography. Five inches of topsoil is then placed as evenly as possible using reserved or imported soil, and the area is seeded to minimize erosion. Care is taken to avoid compaction of this layer. Table 7 presents the required seed mix for areas within the IA. The Site Ecology group provides guidelines for the revegetation of areas within the BZ on a case-by-case basis.

If an ER action is required, D&D is requested not to backfill the area. ER backfills, grades and revegetates the area when the ER action is completed using the above guidelines. The ER action is integrated with the D&D actions.

Final Site contours and revegetation will be established as part of the Site Land Configuration Study.

Table 7. Industrial Area Final Seed Mix

Species	Application Rate (pounds per acre pure live seed) ^a
Big Bluestem (<i>Andropogon gerardii</i>)	4.0
Little Bluestem (<i>Andropogon scoparius</i>)	3.0
Indiangrass (<i>Sorghastrum nutans</i>)	1.0
Slender Wheatgrass (<i>Agropyron trachycaulum</i>)	3.0
Red Three-awn (<i>Aristida purpurea</i>)	2.0
Western Wheatgrass (<i>Agropyron smithii</i>)	2.0
Blue Grama (<i>bouteloua gracilis</i>)	3.0
Side-oats Grama (<i>Bouteloua curtipendula</i>)	3.0
Blue Flax (<i>Linum perenne</i>)	1.0
Total	22.0

^a Assumes drill-seeding is the method of application. Application rates should be doubled if the seed is broadcast.

6.11 Closeout Report

Upon completion of each ER project, Integration and Engineering coordinates with the Field Project Manager and Decision Management Team to prepare a Closeout Report for review and approval by the LRA. Each Closeout Report contains the following information:

- Characterization data, including data table and location map;
- Description of the remedial action, including the rationale for the action and a map of the target remediation area;
- Map of the actual remediation area, including bounds of the excavation;
- Dates and durations of specific remedial activities;
- Confirmation sampling data, including data table and location map, as well as a comparison of the confirmation data and applicable cleanup goals;
- Verification of the remediation waste treatment process (if applicable), including a description of the process and analytical results confirming that the treatment was successful;
- Description of RCRA unit closure activities (if applicable), (see Sec. 6.5.3 of the RSOP for applicable closure performance standards);
- Description of any deviations from the RSOP (i.e., field changes), and the reasons for those changes;
- Description of the condition of the remediated area, including a map showing levels and locations of residual contamination above background plus two standard deviations, method detection limits, and Tier II ALs (if any);
- Description of site reclamation activities (i.e., stabilization/temporary revegetation);
- Description of near-term stewardship actions and long-term stewardship recommendations (i.e., institutional and/or physical controls);
- Description of remediation waste type(s), volume(s), and disposition (interim and final);
- Table showing “no longer representative” sampling locations and sample numbers; and
- Photographs taken before, during, and/or after site characterization/remediation/reclamation activities.

6.12 Closeout Checklist

Upon completion of authorized work scope described in the current CPB, the ER Field Project Manager completes an ER Project Closeout Checklist, which is verified by the ER Project Controls Manager. A sample checklist is provided in Appendix H.

7.0 DOCUMENT CONTROL

ER documents and work products are controlled using sitewide and Program-specific processes, as described in the following paragraphs.

7.1 Site Document Control

The Site Document Control organization is responsible for the control and distribution of documents, including but not limited to, policies, procedures, management directives, and manuals. ER documents that fall into these categories are controlled by the Site Document Control organization in accordance with the Site Document Control procedure (K-H 2001k).

7.2 ER Document Control

All ER documents that are used to control work (e.g., HASPs, FIPs, and SAPs) will be controlled to ensure ER work is performed to the most current, approved methodologies. Controlled distribution provides a verifiable method for distributing such documents and subsequent changes to the appropriate personnel. ER maintains an internal document control process that may be used when control and distribution of documents by the Site Document Control organization is not mandatory per the Site Document Control procedure (K-H 2001k).

The ER Field Project Manager who is responsible for a given document will provide the final, approved document to the ER Document Control Coordinator for control and distribution. Electronic and hard copy versions of the documents will be provided. The responsible manager will also provide a distribution list, indicating the names and locations of personnel requiring controlled and reference only copies of the document. The Document Control Coordinator will assign and place a control number on the document, run copies, distribute the document, and enter the appropriate document data into the ER Document Control Database.

If documents are revised, subsequent to the initial release and distribution, the responsible ER manager will provide a signed, approved copy of the revision to the ER Document Control Coordinator for control and distribution. An electronic copy of the revision will also be provided. The distribution list may be updated, if required. The ER Document Control Coordinator will copy and control the document, update the ER Document Control Database and distribute the document, as required.

“Reference only” copies will be supplied upon request. However, “reference only” copy-holders will not be on the controlled distribution when document revisions are made. The ER Document Control Coordinator will maintain a listing of the “reference only” copy-holders for each controlled document.

Subcontractors may use their own document control system to control and distribute Subcontractor-generated documents.

7.3 Logbook Control

Logbooks will be maintained for all ER field projects in accordance with the Site Use of Logbooks procedure (KH 2001). ER Field Managers will obtain a unique logbook control number for each field logbook from the ER Document Control Coordinator. The ER Document Control Coordinator will maintain logbook control number as part of the ER Document Control

Database. Field logbooks will be returned to the ER Document Control Coordinator when filled or when the project is completed.

7.4 CERCLA Administrative Record

An AR File must be maintained for all CERCLA actions. Because ER characterization and remediation activities are conducted under CERCLA, a record of decisions is maintained in the Site's AR. Copies of RFCA decision documents, Closeout Reports, and other ER project documents are maintained, including drafts of documents issued for public comment.

8.0 REFERENCES

DOE, CDPHE, EPA, 1996, Final Rocky Flats Cleanup Agreement (RFCA), Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE, 2000, RFCA Standard Operating Protocol for Facility Component Removal, Size Reduction, and Decontamination Activities, Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE, 2001a, Industrial Area Sampling and Analysis Plan (IASAP), Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE, 2001b, RFCA Standard Operating Protocol for Asphalt and Soil Management, Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE, 2002a, Buffer Zone Sampling and Analysis Plan (BZSAP), Rocky Flats Environmental Technology Site, Golden, Colorado.

DOE 2002b, RFCA Standard Operating Protocol for Routine Soil Remediation (ER RSOP), Rocky Flats Environmental Technology Site, Golden, Colorado.

K-H, 1998a, Rocky Flats Environmental Technology Site ALARA Program Manual, MAN-064-SAPM, Revision 0.

K-H, 1998b, Rocky Flats Environmental Technology Site Occurrence Reporting Process, 1-D97-ADM-16.01, Revision 2.

K-H, 1999a, Rocky Flats Environmental Technology Site Real Property Management Manual, 1-MAN-009-PMM, Revision 1.

K-H, 1999b, Rocky Flats Environmental Technology Site Emergency Plan, EPLAN-99, Revision 0.

K-H, 2000a, Rocky Flats Environmental Technology Site Integrated Work Control Program (IWCP) Manual, MAN-071-IWCP, Revision 3.

K-H, 2000b, Rocky Flats Environmental Technology Site Readiness Determination Manual, MAN-040-RDM, Revision 2.

K-H, 2000c, Rocky Flats Environmental Technology Site Conduct of Operations (COOP) Manual, MAN-066-COOP, Revision 0.

K-H, 2000d, Rocky Flats Environmental Technology Site Nuclear Criticality Safety Manual, MAN-088-NCSM, Revision 3.

K-H, 2000e, Rocky Flats Environmental Technology Site Radiological Control Manual, MAN-102-SRCM, Revision 1.

K-H, 2000f, Rocky Flats Environmental Technology Site Transportation Safety Manual, MAN-T91-STSM-001, Revision 1.

K-H, 2000g, Rocky Flats Environmental Technology Site Offsite Transportation Procedure, PRO-T95-OSTP-002, Revision 0.

K-H, 2001a, Rocky Flats Closure Project Management Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, Revision 5a.

K-H, 2001b, Environmental Restoration Program Quality Assurance Program Plan (QAPP), PRO-1453-ERPQAPP, Revision 0.

K-H, 2001c, Environmental Restoration Program Health & Safety Plan, Revision 0.

K-H, 2001d, Environmental Restoration Program Management Assessment of Readiness, PRO-1397-ERMAR, Revision 0.

K-H, 2001e, Rocky Flats Environmental Technology Site Occupational Safety and Industrial Hygiene (OS&IH) Program Manual, MAN-072, OS&IHPM, Revision 0.

K-H, 2001f, Rocky Flats Environmental Technology Site Integrated Monitoring Plan.

K-H, 2001g, Rocky Flats Environmental Technology Site Radiological Safety Practices Manual, RSP-TOC.

K-H, 2001h, Rocky Flats Environmental Technology Site Spill Prevention, Control, and Countermeasures Plan (SPCC) Plan.

K-H, 2001i, Rocky Flats Environmental Technology Site Storm Water Pollution Prevention Plan (SWPPP), 21000-SWPPP.

K-H, 2001j, Field Decontamination Operations, PRO-1455-FDO.

K-H, 2001k, Site Document Control, PRO-1329-DM-03, Revision 0.

K-H, 2001l, Use of Logbooks, PRO-1457-UL.

K-H, 2002a, Environmental Restoration Program Remedial Action Decision Management System Implementation Plan, ERDC-2002-TBD, Revision 0 ([in progress](#)).

K-H, 2002b, Environmental Restoration Program Waste Management Plan, ERDC-2002-0002, Revision 0.

RMRS, 1998, Handling of Field Decontamination Water and Field Wash Water, RMRS/OPS-PRO.112, Revision 0.

RMRS, 1999, Equipment Decontamination at Decontamination Facilities, RMRS/OPS.PRO.070, Revision 0.

APPENDIX A CONDUCT OF OPERATIONS CHECKLIST

Project Name _____

ER Field Project Manager _____ Date _____
(print) (sign)

Purpose: To comply with DOE Order 5480.19 "Conduct of Operations Requirements for DOE Facilities"

COOP is the Site core culture of formality and discipline...to provide uniformity and excellence in accomplishing work.

Implementation: As Project Manager, you and your line management are responsible for fostering teamwork, establishing safety culture, providing clear roles and responsibilities, and setting expectations for performance.

You must also frequently monitor and assess performance by direct observation, hold personnel accountable for performance, and take action to correct any deficiencies.

The Site Conduct of Operations Manual (MAN-066-COOP) contains the elements of the Program and requirements for performing work.

THE FOLLOWING ITEMS ARE PROVIDED TO ASSIST YOU IN IMPLEMENTING COOP IN YOUR PROJECT.

(Note: This is not an all-inclusive list of COOP requirements.)

- ☐ **1. Personal Involvement for Safe Work:** Effective ISMS requires the implementation of STAR prior to each job.

STOP Eliminate distractions and identify job at hand.

THINK What should occur? What to do if unexpected occurs? Review hazards and controls.

ACT Do the work using correct tools/techniques. Be prepared for the unexpected.

REVIEW Evaluate actual work and any unplanned responses.

Ensure that each employee knows he or she is responsible for working safely and that they have the authority to stop work if an unsafe condition exists.

- ☐ **2. Plan of the Day:** Enter all work activities onto the appropriate POD to ensure coordination of work, resources and impacts to others.

- ☐ 3. **Pre-Evolution Briefings and Job Task Briefings:** Holding PEBs and JTBs ensures that the workers understand what is to be done and the hazards and controls. PEBs and toolbox meetings must stress safety, compliance and stop work authority. Prior to holding the meeting; review appropriate lessons learned for incorporation into the meeting, ensure all involved in the work can attend the meeting, and preplan responses for upset conditions to review at the meeting.

PEBs - Required for all ER work. Meeting must be documented (See Appendix 4 of MAN-066-COOP).

JTBs - Used for routine and low-hazard activities. Does not need to be documented. During the meeting, ensure understanding and ask open-ended questions. Newspapers, magazines, and books, etc. should not be allowed in the meeting. The PM must hold additional PEB or JTB if new staff are assigned to the work, or the work has been shut down for longer than 48 hours. For regularly occurring operations, the PM may elect to do one comprehensive PEB at the start of the week and then hold shortened PEBs the remainder of the week. The shortened PEBs should concentrate on the hazards, controls, and recent problems or issues. Documentation requirements are the same, except only parts A, B, C, 6, 8, 9, 17, 21, 23, 26, 28, 29, 34 and 35 of the PEB form need to be covered.

- ☐ 4. **Work Stations:** Access to reference manuals, SOPs, IWCPs, HASPs, RWPs, SAPs, etc. must be provided to project personnel at a designated location at the project site. The PM must maintain a professional environment at the work station.
- ☐ 5. **Abnormal Events:** Take appropriate action in the case of an abnormal event or emergency and make required notifications (Shift Super, Occurrence, etc.). A project specific notification card is recommended.
- ☐ 6. **Access Controls:** Post and enforce access requirements. Escort visitors. Accountability Badges are required for nuclear facilities and some projects. If accountability badges are required, a board must be located in a convenient location for all workers to hang their badges.
- ☐ 7. **Shift Relief & Turnover:** If work is continuous or on multiple shifts, you must have a formal turnover. The exiting employee must ensure the on-coming employee is fit for duty and document turnover status of operations.
- ☐ 8. **Procedures:** Adherence to procedures represents a firm commitment to disciplined and safe operations. All procedures are to be performed as written, or changed prior to work continuing. In an emergency, do what is required to achieve a safe shut-down condition. Standing Orders and Operating Orders may be used on a limited basis.

Standing Orders – These are sitewide and non-technical.

Operations Orders – These can be either administrative or technical.

Administrative orders are good for up to 24 months, technical orders are good for up to 36 months. Both types must be reviewed annually. Technical orders must go through the same review/approval process as an operating procedure and meet the requirements of IWCP Chapter 6. Interim Technical Operations Orders can

be issued for up to 60 calendar days. These documents may not be used to modify or revise existing procedures.

- ☐ **9. Communications:** Communications must be reliable in providing accurate transmission of information; whether verbal or written, must be distinct, deliberate, clear and concise. If communication is verbal, have receiver repeat back as necessary to ensure communication is correctly understood. Document all communication appropriately.
- ☐ **10. Logs and Round Sheets:** A record of the day-to-day activities must be maintained. A hard covered logbook with lined and sequentially numbered pages is required. Military time will be used, all entries will be legible and each day will start on a new page. Include all events, status changes, accidents, injuries, and documentation of shift turnover (if applicable). If equipment is part of the operation, round sheets must be utilized to document the specific operating conditions of each piece of equipment or daily inspection sheets as required.
- ☐ **11. Lessons Learned:** Appropriate lessons learned will be briefed at the PEB. Assessing performance and sharing the insights with other staff is an integral part of continuous improvement.
- ☐ **12. Overtime and Work Limitations:** No more than 16 consecutive hours may be worked by an employee. A break of at least 8 hours must occur between work sessions. No more than 16 hours during a 24-hour period may be worked, nor 24 hours in a 48-hour period, nor no more than 72 hours in any 7-day period. Employees must have a minimum of 1 day off after working 20 consecutive days. All overtime requires prior management approval. Senior Executive approval is required for any deviations from the above.

APPENDIX B CRITICALITY SAFETY GUIDANCE

DATE: April 20, 2001

TO: Catherine Madore, Environmental Compliance Services, T117A, x3692

FROM: J. E. Hicks, Criticality Safety, T886B, x7806

SUBJECT: Guidance Regarding Handling and Disposition of Fissionable Material Encountered in Remediation of Groundwater and Soils, JEH-003-01

BACKGROUND:

This letter is in response to your request of April 16, 2001, for criticality guidance for use during remediation and restoration of groundwater and soils.

The site Nuclear Criticality Safety Manual (NCSM), Revision 3 (MAN-088-NCSM) establishes requirements for facilities that handle, process, store, stage, transfer, transport, or otherwise deal with a significant quantity of fissionable material. Remediation efforts will occur after the facilities, in the usual sense, have been removed. This may include immobilization or removal of soils and pipelines.

DISCUSSION:

There are several exemptions currently provided by the Site NCSM that may apply to this work. Limits for waste handling and packaging are also established for transuranic waste packages.

The criticality safety program provides the following exemptions. Activities that fall below these fissile material levels do not require criticality control.

1. Depleted uranium is exempt.
2. Natural uranium is exempt.
3. Facilities or operational activities that only contain separately packaged material containing less than 100 nanocuries per gram of transuranic nuclides or less than or equal to 15 grams of fissionable material in each 55-gallon or larger waste drum/package are exempt from the specific facility criticality safety requirements.
4. Any **Single** container with less than 1 percent of the minimum critical mass (~ 4.5 grams Weapons Grade Plutonium) is exempt. If other containers are in the vicinity such that the containers could be brought together, this exemption does not apply.

The criticality safety program has also developed other exemptions and limits, which may be used for this activity. These limits and evaluations are available for information on the Site Intranet by accessing the site document search and entering "site wide criticality safety" in the search field. The document titles are SITE WIDE CRITICALITY SAFETY LIMITS (Volume 1), and SITE WIDE CRITICALITY SAFETY EVALUATIONS (Volume 2). Actual postings and the complete manuals are available from document control.

Cutoff Values for fissile material control are established in evaluation JH-128, NMSL-980077 (Volume 2 above). This evaluation establishes exemption values for criticality control which may be applied in areas where fissionable material in larger quantities or concentration is also handled. These limits are consonant with the exemptions in MAN-088-NCSM. The limits are:

- 5 Grams Plutonium in any 7 Ft³ or larger container (Is it bigger than a 55-Gallon Drum?);
- 15 Grams enriched uranium in any 7 Ft³ or larger container (Is it bigger than a 55-Gallon Drum);
- Two or fewer small items with a combined total of less than 4 grams Plutonium Equivalent;
- Substitute enriched uranium 1 for 1 for Plutonium if there are less than 200 grams total enriched uranium and plutonium per package.

Limits for transuranic waste and small quantities of fissionable material have also been established. The limits that would be most applicable to this work include the TRU waste box limits in section 5.6 and the drum limits in section 5.8 of the SITE WIDE CRITICALITY SAFETY LIMITS and SITE WIDE CRITICALITY SAFETY EVALUATIONS. These limits are 325 grams (Fissile Gram Equivalent, FGE) per box and 200 grams FGE per drum at the 95 percent upper confidence limit. These are also the WIPP transport and acceptance values.

A small quantity limit is also provided in section 2.3 of the SITE WIDE CRITICALITY SAFETY LIMITS and SITE WIDE CRITICALITY SAFETY EVALUATIONS. This limit allows the handling of up to four 50-gram batches in one area. This limit may or may not be useful to the project without a disposal or waste container limit also being applied.

Previous work from Hanford (ARH-600 III.A5(97)-5 / ARH-2622) indicates that limits could be written for fissile material in soil. This work is about 30 years old and we do not have sufficient data onsite to use it directly.

RECOMMENDATIONS:

The amount and levels of fissile contamination encountered during remediation should be monitored. If a potential for exceeding the low-level waste quantities or the exemptions stated above occurs, a program to implement and use the TRU waste packaging limits should be activated. If there appears to be a potential for quantities or fissile concentrations too large for disposal as TRU Waste, specific limits will need to be developed.

/s/ R.D. Harris 05/03/01
Concurrence Date

/s/ J.R. Chandler 05/03/01
Approval Criticality Safety Manager Date

cc:

M. S. Spears	S. M. Nesta
G. M. Voorheis	A. L. Primrose
J. S. Almon	J. R. Chandler
D. W. Ferrera	J. L. Butler
K.W. Daniels	

APPENDIX C PRE-JOB WALKDOWN CHECKLIST

Site Conditions and Type of Activities Expected

		Condition	Consideration/Specific Comments
1.	<input type="checkbox"/>	Characterization only	
2.	<input type="checkbox"/>	Remediation & Characterization	
3.	<input type="checkbox"/>	Near Building(s) No.(s): Contact Name/Number	
4.	<input type="checkbox"/>	Potential for impact to surface water	
5.	<input type="checkbox"/>	Undisturbed or minimally disturbed areas	
6.	<input type="checkbox"/>	In or near wetlands, seeps, streams, ponds or standing water	
7.	<input type="checkbox"/>	Steep or uneven ground surface	
8.	<input type="checkbox"/>	Project location <input type="checkbox"/> Within security area <input type="checkbox"/> In or near roadway <input type="checkbox"/> In or near parking lot or walkways <input type="checkbox"/> Near buildings <input type="checkbox"/> In or near Preble's Mouse habitat	
9.	<input type="checkbox"/>	Overhead utilities <input type="checkbox"/> Steam <input type="checkbox"/> Natural gas <input type="checkbox"/> Electrical <input type="checkbox"/> Communication <input type="checkbox"/> Unknown <input type="checkbox"/> Utility poles in project area	
10.	<input type="checkbox"/>	Underground utilities <input type="checkbox"/> Steam <input type="checkbox"/> Water <input type="checkbox"/> Sanitary Sewer <input type="checkbox"/> Storm Sewer <input type="checkbox"/> Natural gas <input type="checkbox"/> Electrical <input type="checkbox"/> Communication <input type="checkbox"/> Alarm <input type="checkbox"/> Process waste lines <input type="checkbox"/> unknown <input type="checkbox"/> abandoned	
11.	<input type="checkbox"/>	<input type="checkbox"/> LO/TO required	
12.	<input type="checkbox"/>	Characterization soil disturbance <input type="checkbox"/> < 6 inches <input type="checkbox"/> > 6 inches Remediation soil disturbance <input type="checkbox"/> On annual permit	
13.	<input type="checkbox"/>	Pre-existing conditions requiring change or removal prior to field activity start	

Site Conditions and Type of Activities Expected

		Condition	Consideration/Specific Comments
14.	<input type="checkbox"/>	Location of smoking/eating areas	
15.	<input type="checkbox"/>	Power drop required	
16.	<input type="checkbox"/>	Temporary waste staging areas required	
17.	<input type="checkbox"/>	Material laydown areas or soil/waste stockpiles required	
18.	<input type="checkbox"/>	Temporary roads required	
19.	<input type="checkbox"/>	Revegetation required <input type="checkbox"/> Temporary or <input type="checkbox"/> Final	
20.	<input type="checkbox"/>	Nearby or collocated projects	

Planned Equipment

		Type	Specific Comments
1.	<input type="checkbox"/>	Intrusive sampler <input type="checkbox"/> Geoprobe <input type="checkbox"/> Drilling rig (type) <input type="checkbox"/> Powered auger <input type="checkbox"/> Manual auger <input type="checkbox"/> Hilti Concrete corer <input type="checkbox"/> Hand tools	
2.	<input type="checkbox"/>	Non-intrusive samplers <input type="checkbox"/> HPGe <input type="checkbox"/> Field detectors	
3.	<input type="checkbox"/>	Heavy Equipment -provide no./size by type <input type="checkbox"/> Front-end loader, Articulated <input type="checkbox"/> <input type="checkbox"/> Cranes <input type="checkbox"/> Rubber tired Backhoe <input type="checkbox"/> Vacuum truck <input type="checkbox"/> Trackhoe <input type="checkbox"/> Excavator <input type="checkbox"/> Dump trucks, Articulated <input type="checkbox"/> <input type="checkbox"/> Graders <input type="checkbox"/> Scrapers <input type="checkbox"/> Water trucks	
4.	<input type="checkbox"/>	Other Equipment <input type="checkbox"/> Fork lifts <input type="checkbox"/> Aerial lifts <input type="checkbox"/> Compaction equipment	
5.	<input type="checkbox"/>	Generators	
6.	<input type="checkbox"/>	Project support required <input type="checkbox"/> Port-o-lets and handwash <input type="checkbox"/> Field trailers/canopies	
7.	<input type="checkbox"/>	Compaction gauge Contains source <input type="checkbox"/>	
8.	<input type="checkbox"/>	Other	

Planned Equipment

		Type	Specific Comments
9.	<input type="checkbox"/>	Other	
10.	<input type="checkbox"/>	Other	
11.	<input type="checkbox"/>	Other	

Chemical Hazards

Hazard Present	Type of Hazard	Summary Data/RADMS will Provide
<input type="checkbox"/>	Volatile Organic Compounds or solvents. <input type="checkbox"/> free liquids known/suspected	
<input type="checkbox"/>	Semivolatiles	
<input type="checkbox"/>	Metals	
<input type="checkbox"/>	PCBs	
<input type="checkbox"/>	Asbestos <input type="checkbox"/> Friable or <input type="checkbox"/> Non-friable	
<input type="checkbox"/>	Beryllium	
<input type="checkbox"/>	Other	
<input type="checkbox"/>	Uncharacterized—minimal data exist	
<input type="checkbox"/>	High Potential to contain unknown buried materials (trenches)	

Radiological Hazards

Hazard Present	Type of Hazard	Summary Data/RADMS will Provide
<input type="checkbox"/>	Uranium	
<input type="checkbox"/>	Plutonium	
<input type="checkbox"/>	Americium	
<input type="checkbox"/>	Tritium	
<input type="checkbox"/>	Cesium	
<input type="checkbox"/>	Other	
<input type="checkbox"/>	HCA levels anticipated	

Industrial Hazards

Hazard Present	Type of Hazard	Specific Comments
<input type="checkbox"/>	Confined space entry <input type="checkbox"/> Permit required	
<input type="checkbox"/>	Elevated work <input type="checkbox"/> Scaffolds	
<input type="checkbox"/>	Cutting, welding or hot work	
<input type="checkbox"/>	Excavation Health & Safety <input type="checkbox"/> Protection for personnel entering excavation <input type="checkbox"/> Protection of personnel not entering excavation Excavation protection <input type="checkbox"/> Slope excavation <input type="checkbox"/> Trench box <input type="checkbox"/> Modified trench box <input type="checkbox"/> Other shoring (specify) <input type="checkbox"/> None required (reasons)	
<input type="checkbox"/>	Fire Hazards <input type="checkbox"/> Combustibles/dry grass	
<input type="checkbox"/>	High Noise levels expected	
<input type="checkbox"/>	Biological hazards expected	
<input type="checkbox"/>	Other:	

Yes ☐ No ☐ FIP Addendum needed for this project
Yes ☐ No ☐ HASP Addendum needed for this project

Walkdown Team

Printed Name	Organization	Signature

APPENDIX D

FIELD IMPLEMENTATION PLAN ADDENDUM OUTLINE

1. Project Overview and Background (brief)
2. Project Location
 - 2.1 Project site map including stockpiles, laydown areas, sanitation facilities, rest areas, and project boundaries
3. Project Activities
 - 3.1 Site control
 - 3.2 Weather structures or other shelters or facilities
 - 3.3 Specifics on excavation method including trenching and shoring methods
 - 3.4 Specifics on erosion control
 - 3.5 Water handling specifics
 - 3.6 Temporary road location and maintenance
 - 3.7 Waste handling and staging locations
 - 3.8 Waste container types and amounts
 - 3.9 Traffic control
 - 3.10 Communications
4. Permits and Other Special Conditions
 - 4.1 Soil Disturbance Permit
 - 4.2 Competent person daily inspection and signoff for excavations (initially Site responsibility, may be transferred to subcontractor)
 - 4.3 Competent person daily inspection and signoff for scaffolding
 - 4.4 Confined space
 - 4.5 Fall protection
 - 4.6 Hot work
 - 4.7 Other
5. General Personal Protective Equipment and Access Requirements
6. Site Controls and Requirements
 - 6.1 Decontamination (if not in HASP addenda)
 - 6.2 Sanitation Requirements (if not in HASP addenda)
7. Project Organization, Contact List of Responsible individuals, and Communications
 - 1.1. Stop work authority
 - 1.2. Unknown hazards
8. Emergency Response (if not in HASP or HASP Addendum)

APPENDIX E SAMPLE HASP ADDENDUM

Effective Date: November 1, 2001

Health and Safety Plan Addendum for Industrial Area Group 600-4 Radioactive Site Building 444 Parking Lot

Prepared by: Subcontractor OS&IH Lead

Reviewed and Approved by RISS OS&IH:

Printed Name _____

Signature _____ Date _____

Reviewed and Approved by RISS Radiological Engineering:

Printed Name _____

Signature _____ Date _____

Reviewed and Approved by K-H Project Manager:

Printed Name _____

Signature _____ Date _____

Reviewed for Classification/UCNI:
**DOCUMENT CLASSIFICATION REVIEW
WAIVER PER CLASSIFICATION OFFICE
WAIVER NO. CEX-072-99**

Field activities at IA Group 600-4 will be conducted in accordance with this site-specific Health and Safety Plan Addendum, and the Environmental Restoration Program Health and Safety Plan for the Rocky Flats Environmental Technology Site (ER HASP)

**HEALTH AND SAFETY PLAN ADDENDUM FOR IA GROUP 600-4
RADIOACTIVE SITE BUILDING 444 PARKING LOT****Revision 0**

1.0 Overview and Background**Task Overview**

This Health and Safety Plan (HASP) Addendum covers activities associated with investigation of IA Group 600-4, Radioactive Site Building 444 Parking Lot (IHSS 160). The investigation is designed to further delineate and characterize the extent of radiological and chemical contamination in this area. The investigation scope is defined by the Industrial Area Sampling and Analysis Plan (IASAP) and the Fiscal Year 2002 IASAP Addendum. The IASAP Addendum presents the specific land surveying, surface and subsurface soil sampling, and analytical activities for the IA Group. The activities posing the greatest potential hazards are subsurface soil sampling with a push probe and surface soil sampling using manual methods. Any other intrusive activities at IHSS 160 are considered outside the scope of this HASP Addendum.

Site Location

IHSS 160 contains the Building 444 Parking Lot and a section of Seventh Avenue located east of Building 444. Figure 1 shows the various locations at which investigation activities will be taking place.

Site Background Summary

The IHSS 160 area was previously used as a storage area containing punctured or leaking waste drums and boxes. Wastes resulting from the Building 776/777 fire in May 1969 were stored in this area. Aerial photographs taken in June 1965 and June 1969 show drums and boxes in the unpaved area west of Building 444. Wastes have been removed from the area; however, results of previous investigations indicate chemical and radionuclide contamination of soils.

2.0 Planned Characterization/Remediation Activities

	Characterization		Remediation
✓	Push Probe		Excavation
	Hollow Stem Auger		Shoring
✓	Surface Soil Sampling		Concrete/Asphalt Removal
	HPGe		Pipe/Debris Removal
	Waste Sampling		Dewatering
	Other		Other

3.0 Hazard Evaluation**Hazard Summary**

	Potentially Contaminated Media		Potential Contaminants
✓	Air	✓	Radionuclides (Pu, Am, U)
✓	Surface Soil	✓	VOCs
✓	Subsurface Soil	✓	SVOCs
	Groundwater	✓	Metals
	Surface Water	✓	PCBs
	Process Solid Waste		Asbestos
	Process Liquid Waste		Beryllium
	Other		Other

Description of Other Potentially Contaminated Media or Potential Contaminants

Data from previous investigations indicate volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), metals, and radionuclides were detected above background in surface and subsurface soil. However, only arsenic exceeded the Tier II Action Levels (ALs) established by the Rocky Flats Cleanup Agreement (RFCA) (see Table 1). The arsenic concentration, although above Tier II, is below the background concentration of 13 mg/kg. Soil gas data indicate that tetrachloroethene (PCE) was present at concentrations an order of magnitude greater than other volatile compounds that were detected (Table 1). [PCE was not detected in the soil samples.] Therefore, this work involves potential contact with soil containing low concentrations of chemicals and low activities of radioisotopes. Particular attention will be paid to dust suppression and air monitoring activities. Personnel will use real-time air monitoring results to determine when and if it is necessary to upgrade to higher levels of PPE. Table 2 summarizes potential chemical hazards.

Note: A Location Map will be included in the actual HASP Addendum.

Figure 1. IA Group Location Map

Table 1. Maximum Detected Contaminant Concentrations in Soil at IA Group 600-4 Above Tier II Action Levels

Analyte	Soil	Soil Gas	Tier II AL
Arsenic	9.1 mg/kg	NA	3.81mg/kg**
Tetrachloroethene	-ND-	99 µg/l	NA*

* Action Levels do not exist for soil gas (see Section 5 discussion)

** Subsurface soil action level for industrial use.

NA – Not Applicable

ND – Not Detected

Table 2. Chemical Hazard Summary

Compound, page*	Physical Description	Exposure Path	Flammable	Explosive	Exposure Limit	IDLH Level	Health Effect
Arsenic (inorganic compounds, as As), 20	Silver-gray to tin-white metal; brittle, odorless.	Inhalation, absorption, ingestion, contact w/eyes or skin	no	no	0.002 mg/m ³	5.0 mg/m ³	Ulceration of nasal septum; dermatitis; peripheral neuropathy; gastrointestinal disturbance; respiratory irritation; hyperpigmentation of skin; potential occupational carcinogen
Tetrachloroethene, 300	Colorless liquid with a mild, chloroform odor	Inhalation, absorption, ingestion, contact w/eyes or skin	no	no	25 ppm	150 ppm	Irritates eyes, nose, throat; nausea; flushed face, neck; dizziness, vertigo, incoordination, headache, sleepiness; skin redness; liver damage; potential occupational carcinogen

Data from NIOSH Pocket Guide to Chemical Hazards, June 1997, except as noted (see below).

* Page number listed in bold face refers to that on which compound may be located in NIOSH Pocket Guide to Chemical Hazards, June 1997, in which several of the above compounds are listed by synonym.

Note: Exposure limits are the most conservative values listed in the NIOSH Guide. That is, in cases where the Guide lists a NIOSH value and an OSHA value, the lowest value is listed above.

Flammability based on flash point: if lower than 150F, listed as flammable. Explosive based on LEL: if between 0-10% listed as explosive. (These boundaries reflect expected working conditions.) Where NIOSH data are ambiguous, most conservative position is taken. For example, a species that is nonflammable according to above definition but LEL is listed as 0.3% at >150F would be listed as not flammable but explosive; a species with a flash point listed as NA but which is defined in NIOSH as a flammable gas would be listed above as flammable.

Special Tasks/Hazards

Fall Protection: X Not Applicable

Confined Space Entry Procedures: X Not Applicable

Yes	N/A	Yes	N/A
___	___ Provide Forced Ventilation	___	___ Personal Protection Equip.
___	___ Test Atmosphere for:	___	___ Emergency Procedures
___	___ (a) %O ₂	___	___ Other Special Procedures (describe below)
___	___ (b) %LEL		
___	___ (c) Volatile Organics		
___	___ (d) Other		

Descriptions of Other Special Procedures

Cutting/Welding: X Not Applicable

Yes	N/A
___	___ Relocate or protect combustibles
___	___ Wet down or cover combustible floor
___	___ Check flammable gas concentrations (%LEL) in air
___	___ Cover wall, floor, duct and tank openings
___	___ Provide fire extinguisher
___	___ Other Special Instructions (describe below)

Description of Other Special Instructions

Other Potential Hazards

<input checked="" type="checkbox"/> Slips, Trips, Falls	<input type="checkbox"/> Trenching/Shoring
<input type="checkbox"/> Fire/Explosion	<input checked="" type="checkbox"/> Heavy Equipment/Vehicular Traffic
<input checked="" type="checkbox"/> Heat/Cold Stress	<input checked="" type="checkbox"/> Overhead Hazards
<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Unstable/Uneven Terrain
<input checked="" type="checkbox"/> Machinery/Mechanical Equipment	<input checked="" type="checkbox"/> Noise
<input checked="" type="checkbox"/> Biological (insects and rattlesnakes)	<input checked="" type="checkbox"/> Other (describe below)

Other Description:

Drilling or probing in areas of numerous underground utilities and occasional overhead utilities (see Soil Disturbance Permit and ER HASP, Section 5.4 *Physical Hazards*).

Unanticipated Hazards or Conditions

In the event unanticipated hazards or conditions are encountered, the project activities will pause to assess the potential hazard or condition. The potential hazard or condition will be evaluated to determine whether the controls on the project are sufficient to address the hazard or condition. Based on this initial evaluation, a determination will be made whether to proceed with controls currently in place; segregate the hazard or condition from the project activity, if it can be done safely; or curtail operations to address the unexpected hazard or condition. Concurrence to proceed down the selected path must be obtained from the Kaiser-Hill ER Program Manager. In addition, the resumption of field activities involving radiological issues will be in accordance with Article 345 of the RFETS Radiological Control Manual.

4.0 Personal Protective Equipment

Location

Exclusion Zone (Contamination
Area or High Contamination Area)

Initial Level of Protection

B C **D*** OTHER

Contamination Reduction Zone
(Radiological Buffer Area)

B C **D**** OTHER

*Mod. Level D protection unless the Radiation Work Permit (RWP) has more stringent requirements.

**Level D protection unless the RWP has more stringent requirements.

Specific protective equipment and material (where applicable) for each of the levels of protection identified above are listed below.

Level B (also includes all Mod. Level D requirements)

☐ Pressure demand airline with escape provisions
☐ Pressure demand SCBA

Level C (also includes all Mod. Level D requirements)

☐ Half face air purifying respirator
☐ Full face air purifying respirator
☐ Full face canister air purifying respirator
☐ Safety glasses for half face respirator
☐ Outer butyl rubber gloves

Level Modified D

- ☒ Standard work clothes/ DOE coveralls
- ☒ Hard hat, hard-toed boots, safety glasses
- ☒ Ear protection during drilling or hammering
- ☒ Inner nitrile gloves (1 pair)
- ☒ Leather gloves
- ☒ Additional PPE if required by RWP

Level D

- ☒ Standard work clothes/DOE coveralls
- ☒ Hard hat, hard-toed boots, safety glasses
- ☒ Ear protection during drilling or hammering
- ☒ Inner nitrile gloves (1 pair)
- ☒ Leather gloves

Notes:

Hard hat will be worn on all construction sites and when within 5 feet of Geoprobe® operation or 30 feet of hollow-stem auger operation, or if overhead hazards are present. **High visibility traffic vests** are required when moving Geoprobe® or drill rig and when operating in areas of vehicular traffic.

Air monitoring will be conducted for dust and organic constituents, and additional monitoring will be conducted for radioactive constituents, if specified in the RWP. Positive detections of contaminants that cannot be controlled through dust suppression methods or by pausing to allow VOCs to vent will require the field crew to pause while the HSS consults with the OS&IH Lead. If air purifying respirators or other respiratory protection are found to be necessary, either at the instruction of the OS&IH Lead or due to RWP requirements, personnel will use only the cartridge type(s) specified by the Radiological Operations and Industrial Hygiene departments, as communicated by the OS&IH Lead. Under no circumstances will an unapproved cartridge type be used in place of the cartridge selected by these departments. Cartridges will be replaced at the start of each work day.

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE KNOWLEDGE AND APPROVAL OF THE OS&IH LEAD AND THE PROJECT MANAGER.

5.0 Site/Personal Monitoring

Site Monitoring

The following instruments shall be used to monitor the work environment and workers' breathing zones prior to site entry, during intrusive activities, and during core/soil handling.

Instrument

- ☒ PID w/11.7 eV lamp
- ☐ OVA
- ☐ Combustible Gas Indicator
- ☐ H₂S Detector
- ☐ Colorimetric Detector Tubes
- ☒ Other (describe below)

Monitoring Frequency

- | | | | | | |
|-------|---------|---------|--------|-------|-------------------------------------|
| Cont. | 15 min. | 30 min. | hourly | other | <input checked="" type="checkbox"/> |
| Cont. | 15 min. | 30 min. | hourly | other | <input type="checkbox"/> |
| Cont. | 15 min. | 30 min. | hourly | other | <input type="checkbox"/> |
| Cont. | 15 min. | 30 min. | hourly | other | <input type="checkbox"/> |
| Cont. | 15 min. | 30 min. | hourly | other | <input type="checkbox"/> |
| Cont. | 15 min. | 30 min. | hourly | other | <input checked="" type="checkbox"/> |

Other Instrument Description:

TVA 1000B, Toxic Vapor Analyzer (PID/FID) may be used instead of or in addition to the listed PID. Monitor personnel breathing zones and soil surfaces during times of potential exposure at the discretion of the HSS. Monitor dust with Mini-RAM dust monitor at the discretion of the HSS. A Bicron Field Instrument for the Detection of Low-Energy Radiation (FIDLER) will be used to quantify surface soil radiation levels, and a NE Electra instrument will be used to scan retrieved core (if required by RWP).

Personal Monitoring

____ Personal Air Sampling

_____ Other

Description/Other

Other monitoring may be required by the RWP.

This project requires medical surveillance/bioassay monitoring per 29 CFR 1910.120 and as described in Section ?? of the ER HASP.

6.0 Action Levels

Project personnel will observe the Action Levels shown in Table 3.

Table 3. Field Monitoring Equipment – Action Levels

Instrument	Action Level	Specific Action
PID or PID/FID	Any sustained reading above background in the breathing zone	If any sustained reading (continuous for 5 minutes) above background is present in the breathing zone, affected personnel will move away from the borehole, preferably in an upwind direction, for a time period determined by the HSS. Most likely, the VOC levels will dissipate, as will be confirmed by the HSS, and personnel may return to the work area. If readings above background do not dissipate, a large fan will be used to disperse the VOCs from the breathing zone. If the fan does not reduce VOC readings to background levels, work will be stopped and the OS&IH Lead and the Project Manager will be contacted. (Note: if conducting activities in an area characterized by surface soils with elevated levels of radionuclides, a fan may not be allowed due to its potential to mobilize contaminated dusts. The HSS and/or RCT, as appropriate, will coordinate with the Project Manager to determine the proper course of action in such cases.)
Mini-RAM dust monitor	1.5 mg/m ³ sustained dust levels obtained in the breathing zone.	If sustained levels equal to or greater than 1.5 mg/m ³ are obtained in the breathing zone, dust suppression and soil wetting techniques will be employed using a small sprayer or other equivalent means.
In Rad Areas: NE Electra, Ludlum 2929 swipe counter (or equiv.)		Suspension levels to be determined by Rad Ops. (Possible action is: if surface activity equal to or greater than the limits identified in the Radiological Control Manual (MAN-102-SRCM), Table 2-2, Summary of Contamination is observed, suspend work and contact Rad Engineer and evaluate controls and PPE.)

7.0 Training Requirements

Minimum training required includes 40-hour OSHA Hazardous Waste Operations training (in accordance with 29 CFR 1910.120), subsequent annual refresher(s) as necessary to be current, and Radiological Worker II training. Other task-specific training requirements are contained in the ER HASP.

8.0 Site Controls and Requirements

Decontamination

In order to leave the Exclusion Zone (EZ), equipment (and, if necessary, personnel) will proceed through decontamination procedures, as appropriate, in the Contamination Reduction Zone (CRZ). Decontamination procedures will comply with current RFETS Standard Operating Procedures. In addition, decontamination in radiological areas, if work is performed within such areas, will be conducted in accordance the task-specific RWP.

Decontamination of equipment will typically not be a requirement during an emergency. Instead, equipment may be left as-is, and where it is unless personnel are directed otherwise by the Subcontractor Project Manager or designee. In the event of personnel injury where contamination of the injured individual(s) is suspected, decontamination of the individual(s) will NOT be attempted or performed; instead, this procedure will be conducted by specially-trained medical personnel in Building 122. The HSS will, in as timely a manner as feasible, consult with and inform the OS&IH Lead, Project Manager, and any other individuals as appropriate.

Sanitation Requirements

Portable potable water supply available on work site? X Yes

Portable toilets required on work site? Yes If Yes, how many?
 X No

Temporary washing/shower facilities required at work site? X Yes If Yes, describe below
 No If No, state location of existing facilities.

Description: Personnel will maintain and use a hand-washing facility at the work site (a tub of soapy water and sprayer or tub of clean rinse water is sufficient) during intrusive field activities, and will wash hands prior to drinking fluids, prior to departing work site, and at any other time personnel may desire to do so or at the instruction of the HSS.

An eye wash facility will also be present at the work site, and will consist of, at a minimum, a sufficient number of hand-held bottles of eye wash solution to enable the affected individual to rinse his eyes while enroute to a 15-minute eye-washing station or onsite medical facilities.

Toilets and shower facilities are available in the Field Operations Yard. In addition, buildings in the proximity of the site may contain toilets and eye-wash stations, and some may contain showers. Before beginning work in a new location, the Kaiser-Hill Field Project Manager will contact representatives of the nearest building to arrange for the use of the building facilities, when required. If the building is closed to field personnel for security or other reasons, another building that is nearby and open to personnel will be located and its facilities will be confirmed. In all cases, personnel shall adhere to facility accountability requirements.

9.0 Project Personnel and Roles

Subcontractor Personnel

Project Personnel

<u>Project Personnel</u>	<u>Role</u>
TBD	Project Manager
TBD	Occupational Safety and Industrial Hygiene Lead
TBD	Radiological Coordinator
TBD	Quality Assurance Lead
TBD	Field Supervisor
TBD	Health and Safety Specialist
TBD	Rig Geologist, H&S Technician

Project Personnel

<u>Project Personnel</u>	<u>Role</u>
TBD	Geoprobe® Operator, H&S Technician
TBD	Drill Rig Operator (position filled only if drill rig is required)
TBD	Driller's Helper (position filled only if drill rig is required)
TBD	Alternate Rig Geologist, H&S Technician
TBD	Alternate Geoprobe® Operator, H&S Technician

Other Site Personnel

<u>Site Personnel</u>	<u>Role</u>	<u>Phone Number</u>
TBD	K-H Field Project Manager	TBD
Annette Primrose	K-H ER Field Operations Manager	x4385/p212-6338
Lane Butler	K-H ER Program Manager	x5245/p212-3017
Andre Gonzalez	K-H OS&IH Manager	x6727/p212-6636
Chad Blake	K-H Radiological Engineer	x5909/p212-2079
	HAZMAT Emergency Response	x2911/r2911
	RFETS Shift Supervisor	x2914/r3301
	Occupational Health General Information	x2594

10.0 Emergency Procedures

Emergency Contact Telephone and Pager Numbers

Fire	x2911	Poison Center	629-1123
Ambulance	x2911	Security	x2911

Nearest Telephone

Building 444

Fire and Explosion

In the event of a fire or explosion, if the situation can be readily controlled with available resources without jeopardizing the health and safety of yourself, the public, or other site personnel, take immediate action to do so if currently trained. Otherwise:

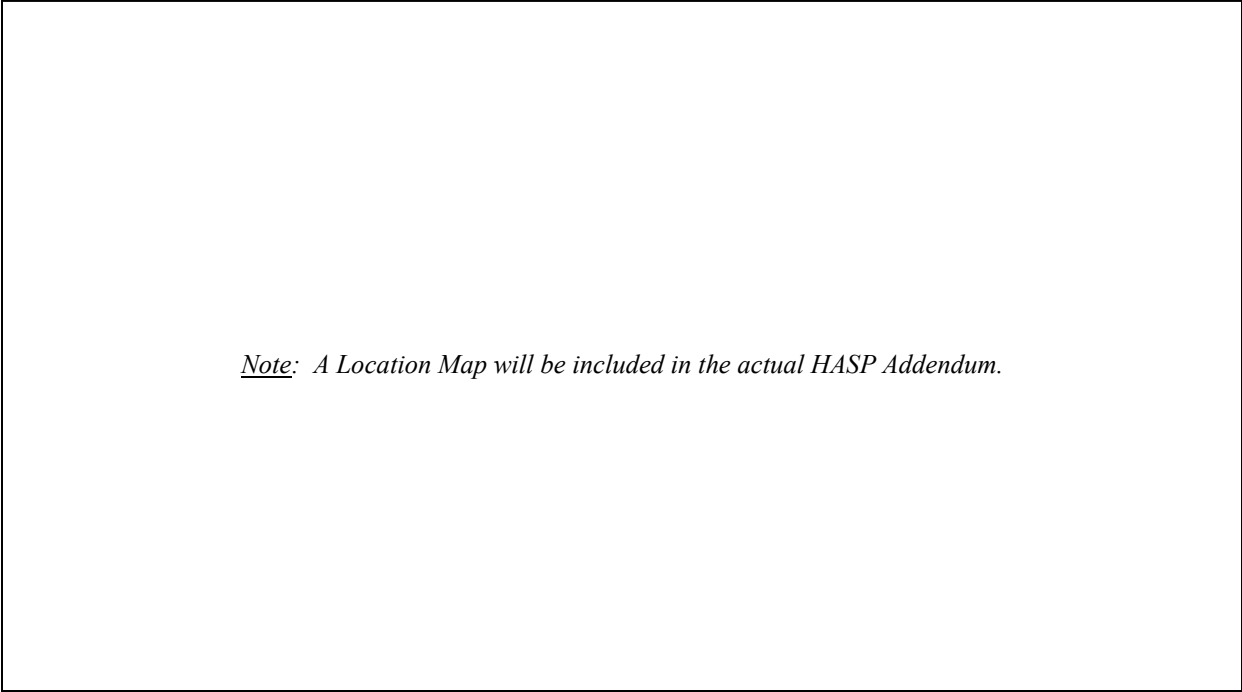
1. Notify emergency personnel by calling **2911**
2. If possible, isolate the fire to prevent spreading.
3. Evacuate the area.

Onsite Injury or Illness

In the event of an injury requiring more than minor first aid, or any employee reporting any sign or symptom of exposure to hazardous substances, immediately take the victim to the RFETS Medical Facility located at Bldg. 122 (Figure 2) (phone x2594). In the event of life-threatening or traumatic injury, implement appropriate first-aid and immediately call for emergency medical assistance at x2911.

The Shift Superintendent is the designated site emergency coordinator. He has final authority for first response to onsite emergency situations for all individual drilling and probing locations. As the HSS, TBD will act as the emergency coordinator at the project location until such time as the Shift Super has taken over.

Upon arrival of the appropriate emergency response personnel, the HSS will defer all authority but remain on the scene, if necessary, to provide assistance. At the earliest opportunity, the HSS or the site emergency coordinator will contact the Project Manager and/or OS&IH Lead.



Note: A Location Map will be included in the actual HASP Addendum.

Figure 2. Location of Emergency Medical Facilities

APPENDIX F ER RSOP IMPLEMENTATION CHECKLIST

The regulatory agencies will be part of the decision process starting with developing the overall remediation strategy and continuing through the decision-making process.

The Field Project Manager must use the consultative process to establish and maintain an effective working relationship with the regulators.

IHSS Group #: _____	Date Completed	Initials
A. PRIOR TO REMEDIATION		
1. Confirm approved SAP Addendum and/or RSOP Notification has been prepared and planned activities have been discussed at regulatory agency meeting. If an UST is part of the project, confirm that it has been included in the notification.		
2. Regulators invited to participate in pre-evolution briefing?		
B. DURING REMEDIATION		
1. ALARA Review: Can the work be executed safely?		
2. Remediation maps developed based on characterization via consultative process?		
3. Does treated soil meet backfill requirements?		
4. Confirm ALARA/Stewardship Evaluation has been completed. (Additional excavation required to achieve ALARA [cost] or benefit [save] later?)		
5. Documented concurrence on completion of remediation via the consultative process. (Have remedial action objectives [RAOs] been achieved)?		
6. If any portion of a RCRA unit is removed during remediation (prior to submittal of unit-specific closure information), then document Lead Regulatory Agency (LRA) concurrence via an RFETS Regulatory Contact Record.		
C. POST REMEDIATION		
Notify ER Integration and Engineering if possible additional physical controls may be required to reduce the impact of residual contamination.		
D. NOTES 		
E. CLOSEOUT SIGNATURES		
ER Field Project Manager : _____	Date _____	
ER Field Operations Manager: _____	Date _____	

APPENDIX G
PRE-EVOLUTION BRIEFING RECORD
(from Appendix 4 of MAN-066-COOP, Revision 1)

Evolution Description: _____

Evolution Supervisor: _____

A. * Date/Time of PEB: _____

B. * Applicable Procedure Number/Work Package Number: _____

C. * Personnel Attending: (List here or attach an attendance roster):

Name	Employee #	Project	Name	Employee #	Project
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Briefing Check-Off List:

Initials

- | | |
|-----------------------------------------------------------------------------------------------------------|-------|
| 1. The evolution is scheduled on the POD. | _____ |
| 2. The trainee-to-instructor ratio is as authorized by the FM. | _____ |
| 3. Evolution Supervisor has conducted a walkdown for new or complex evolutions if not previously dry run. | _____ |
| 4. Participants have the procedures, work package, or other documents needed. | _____ |

PRE-EVOLUTION BRIEFING RECORD (page 2 of 4)

5. The necessary documents are available for use at the PEB (e.g., *CSOL/NMSL*, *Material Safety Data Sheets*, *RWP*, *criticality safety analyses*, etc.).

6. *Evolution Supervisor briefs changes to procedures that have occurred since the activity was last conducted.

7. Necessary personnel are in attendance. Trainee limitations on operating equipment/taking rounds/making log entries discussed.

8. *The scope of the evolution to be performed including LO/TO requirements and responsibilities of each individual identified and discussed. Procedure covered in sufficient detail to ensure participants understand the evolution, and their role. Radiological hold points discussed. If multiple work groups are involved with interfacing activities, specific work scopes, interfacing procedures, and coordination of the groups discussed.

9. *Current facility conditions, impacts of other evolutions, and impacts of this evolution on ongoing work discussed with SM. Additionally, for nuclear facilities, impact of this evolution on the AB discussed with the SM.

10. Precautions, limitations, initial conditions, and prerequisites reviewed.

11. Adequate communications equipment available.

12. The required tools and equipment are available.

13. Portable instruments are available (*if required*).

14. Personnel taking, receiving, or transmitting data are familiar with the data requirements.

15. Expected instrument readings discussed (*if applicable*).

16. Appropriate material transfer, and data recording forms are available.

17. *Discuss expected Item Description Codes (IDC), and action to take if other IDCs are encountered.

PRE-EVOLUTION BRIEFING RECORD

(page 3 of 4)

18. Are hazardous materials involved? ☐ YES ☐ NO (if answer is no, continue the briefing check-off list. If yes, complete and discuss Appendix 5, Hazardous Material Release Prevention/Preparedness Checklist, and continue the briefing check-off list). _____
19. Hazards associated with the evolution and PPE/safety equipment discussed. Location of eyewash, safety showers, and spill kits discussed (if applicable); heat stress/cold stress briefing per Occupational Safety & Industrial Hygiene Program Manual Chapter 16 (if applicable). _____
20. Waste disposal and applicable sections of the Waste Generating Instruction have been discussed. Waste Generator qualified personnel available. _____
21. *RWP discussed. _____
22. ALARA review for new activities discussed. _____
23. *Expected radiological conditions discussed, including contamination and radiation levels. Methods to minimize exposure discussed. _____
24. Criticality Safety Evaluation discussed for new activities. Criticality Safety Officer (CSO) may assist. _____
25. Actions to be taken in the event of emergencies or upsets, or if any controls are exceeded, discussed (fire, criticality, glovebox overheat, SAAM/CAM alarm, CSOL limits, etc.). _____
26. *Recent problems, changes, lessons learned, and occurrences relative to the evolution discussed. _____
27. Potential shift changes, shift reliefs and breaks discussed. _____
28. *Applicable NMSLs and/or CSOLs discussed. NSM 3.12 assignment made. Reminder made that satisfactory NSM 3.12 is reported to the Evolution Supervisor prior to activity start, and changes requiring another NSM 3.12 discussed. _____
29. *Open criticality infractions and deficiencies which impact the evolution discussed. Discuss Material at Risk (MAR) control (if applicable); steps to take if exceeded. _____

PRE-EVOLUTION BRIEFING RECORD

(page 4 of 4)

30. Egress procedures and egress routes and assembly areas discussed. _____
31. Unique postings in the work area discussed. _____
32. Escort requirements discussed and escort assignments made. _____
33. Provisions for housekeeping and final cleanup discussed. _____
34. *Open-ended questions asked to ensure participants understand the evolution and are aware of hazards involved, hazard controls, responses expected during the evolution and procedural compliance requirements. Stop-work authority of individuals discussed. Solutions to barriers impeding safe/efficient work discussed. Watches synchronized if applicable. _____
35. *All questions have been adequately answered. _____

Evolution Supervisor Date

*Required for shortened PEB. See [Section 6.3.3.1](#) of MAN-066-COOP.

APPENDIX H ER PROJECT CLOSEOUT CHECKLIST

Project Name: _____

Closeout Information	
<input type="checkbox"/>	Final project Variance Analysis Report prepared and included in project file.
<input type="checkbox"/>	Final Cost Performance Report completed and included in project file.
<input type="checkbox"/>	Appropriate project documents have been included in the Administrative Record.
<input type="checkbox"/>	All project charge numbers have been closed.
<input type="checkbox"/>	Procurement has been notified that all project contracts and purchase orders are complete.
<input type="checkbox"/>	All materials, facilities and equipment have been screened for capitalization.
<input type="checkbox"/>	Project equipment, facilities, materials and Government Furnished Equipment (GFE) is dispositioned per customer direction.
<input type="checkbox"/>	Project Closeout Report prepared and approved by the Lead Regulatory Agency (LRA).
<input type="checkbox"/>	Waste tracking and final disposition forms submitted to ER Project Controls Manager.
<input type="checkbox"/>	Project closeout file compiled and submitted to ER Program Manager.
<input type="checkbox"/>	As-built drawings completed (if required)

ER Field Project Manager

Date

ER Project Controls Manager

Date